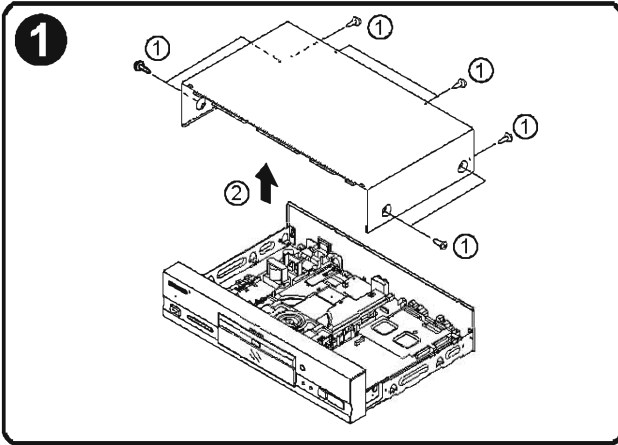


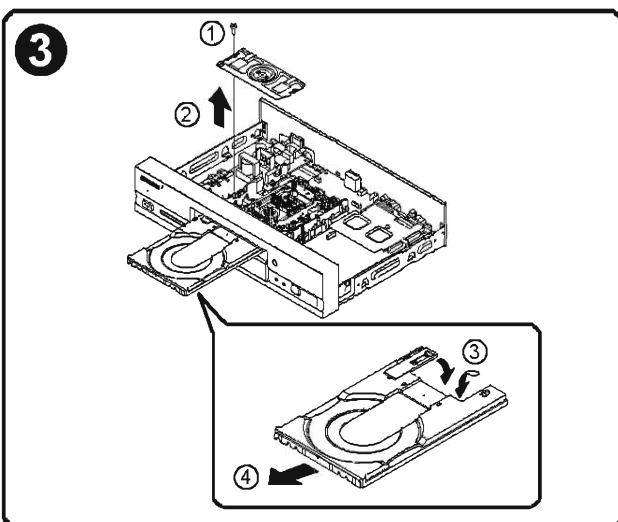
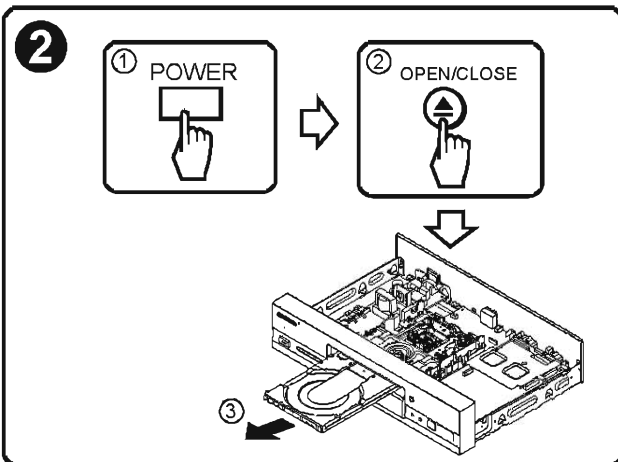
# 7. GENERAL INFORMATION

## 7.1 DISASSEMBLY

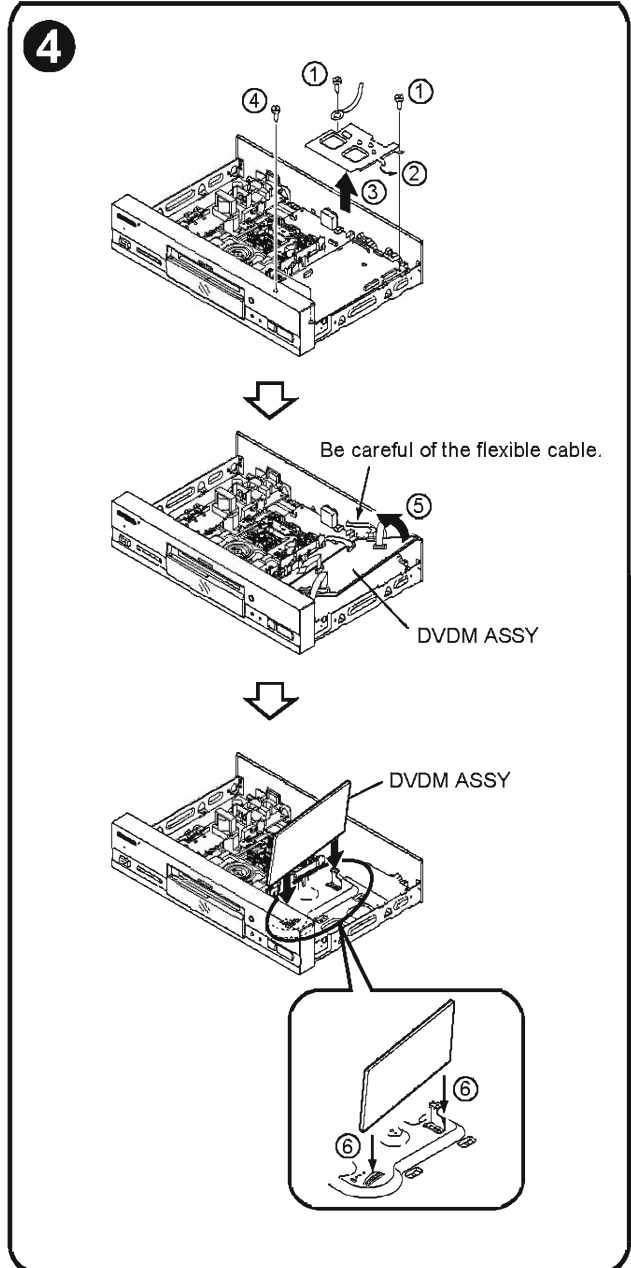
### BONNET



### DISC TRAY

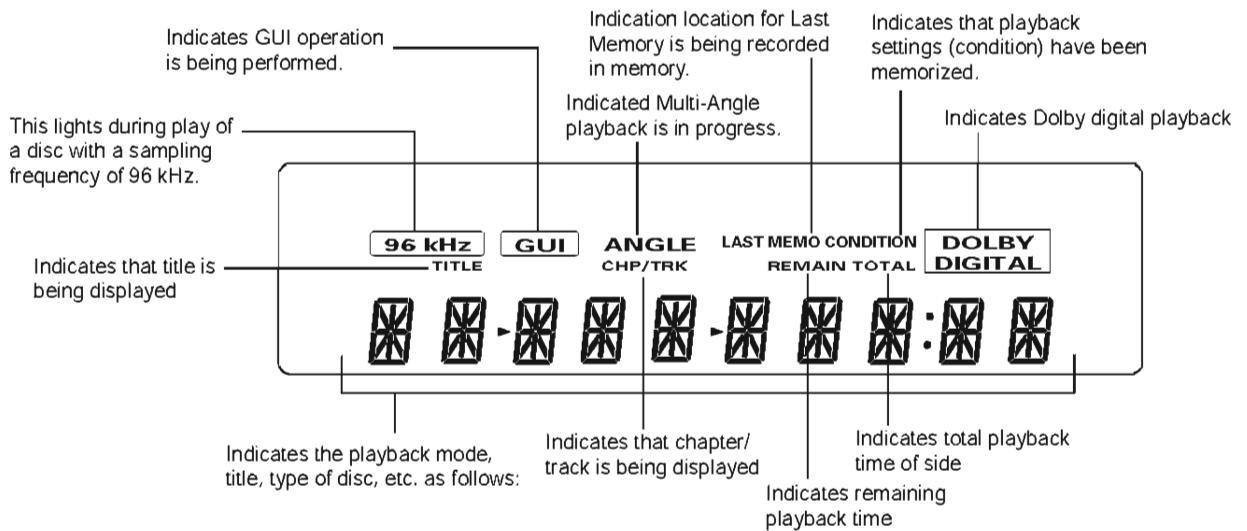


### DVDM ASSY



Note : For the mechanism section disassembly, refer to the service guide.

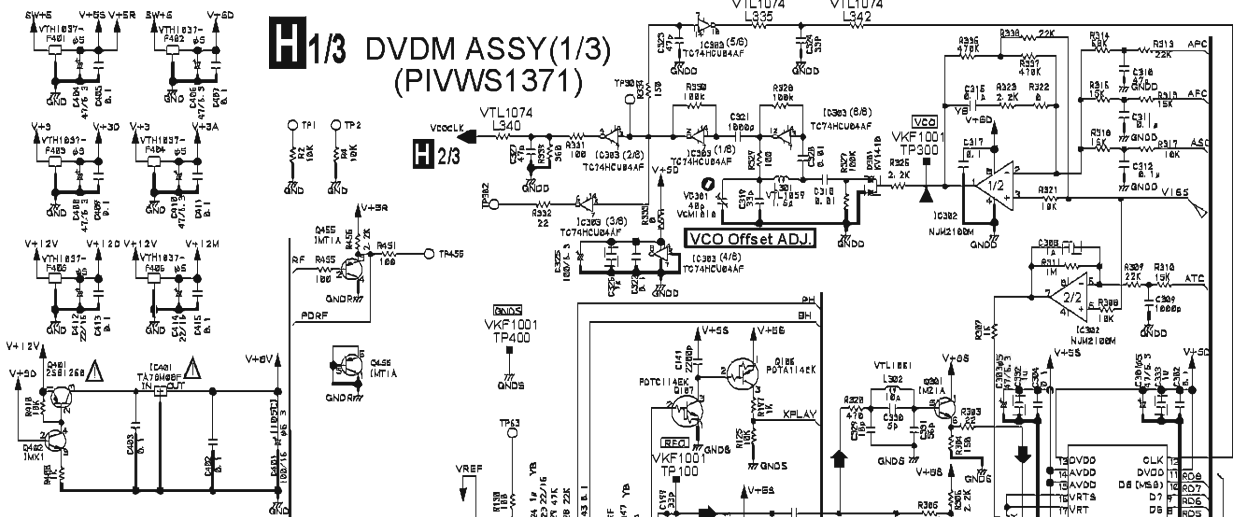
## ■ DISPLAY WINDOW



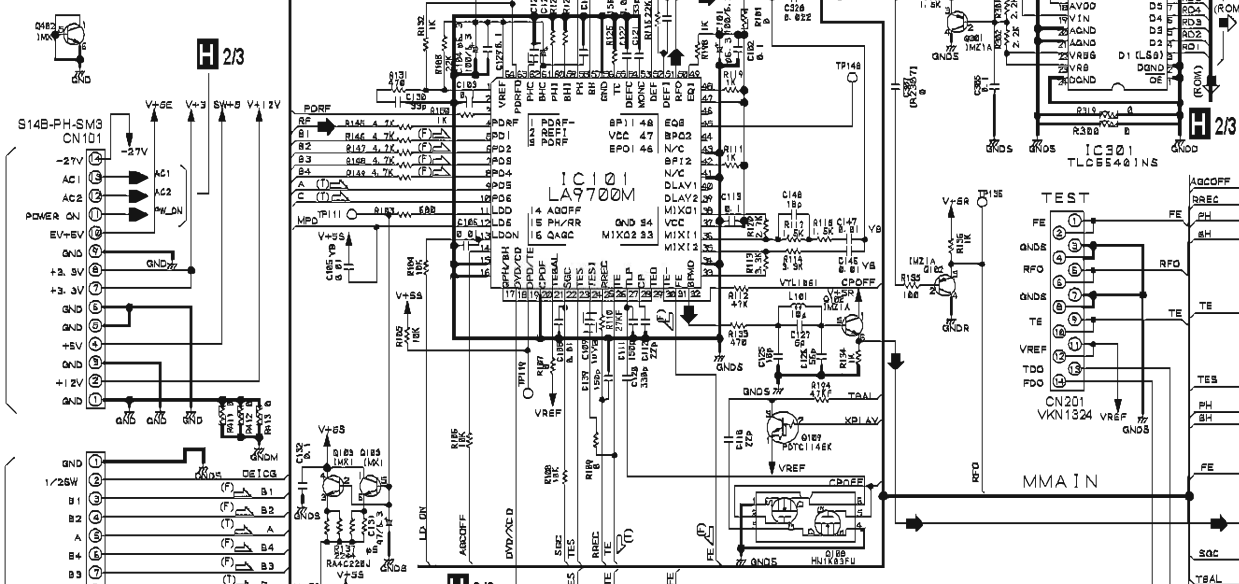
C D	: Compact disc	R_SID	: When side repeat is selected
DVD	: DVD	REPEAT TTL	: When title repeat is selected
VCD	: Video CD	REPEAT AAL	: When all repeat is selected
PBC PLAY	: Playback control playback on Video CD	REPEAT PGM	: When program repeat is selected
OPEN	: Disc table is opening or is open	PLAY	: Playback
CLOSE	: Disc table is closing	STOP	: Stop
RDM	: Random playback	PAUSE	: Pause
PROGRAM	: Program mode	NO DISC	: No disc
R_TRK	: Repeat mode	-- OFF --	: Power is turned off
R_A	: Start point of 2 point repeat playback	MENU	: Menu mode
R_AB	: 2 point repeat playback	TITLE	: Title menu
R_TTL	: Repeat playback of the title	CHAPTER	: Chapter menu
R_CHP	: Repeat playback of the chapter	SUB-TITLE	: Subtitle menu
R_SID	: Disc repeat	SETUP	: Set-up menu
CINEMA	: Cinema mode	AUDIO	: Audio menu
STANDARD	: Standard mode	ANGLE	: Angle menu
REPEAT A	: When memory repeat is selected	COND_MEMO	: Condition memory
REPEAT TRK	: When track repeat is selected	LAST_MEMO	: Last memory
REPEAT CHP	: When chapter repeat is selected		

### 3.3 DVDM ASSY(1/3)

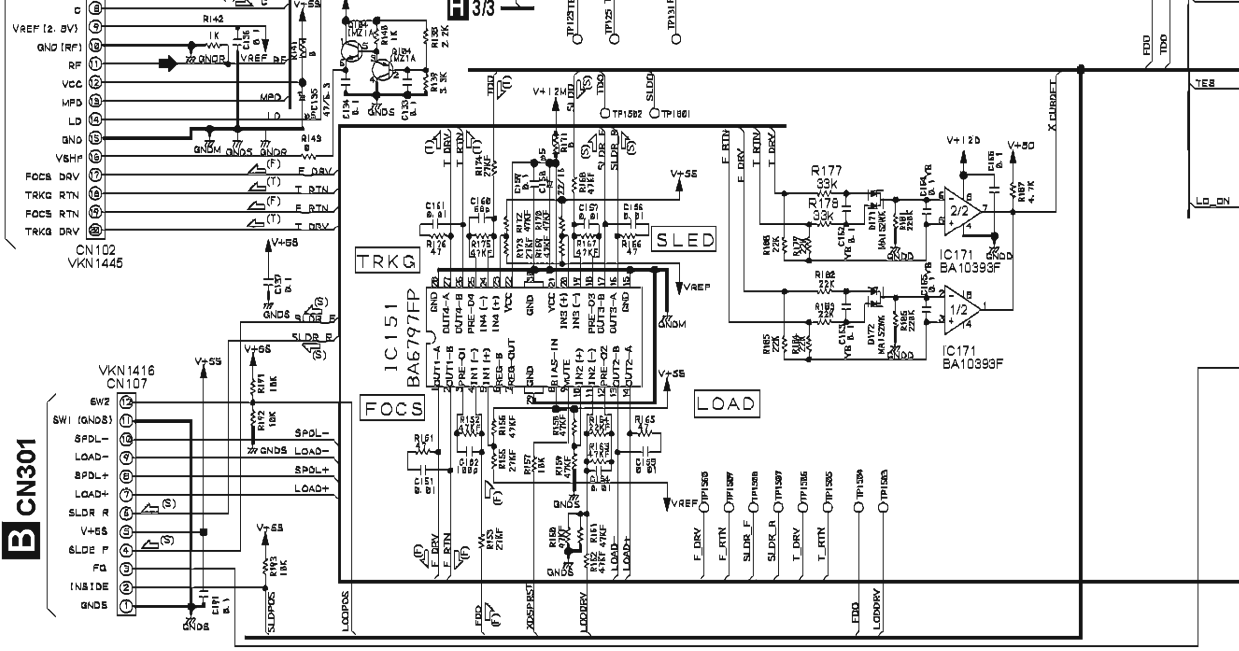
A



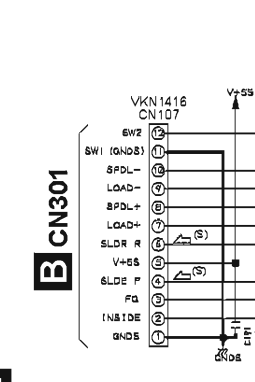
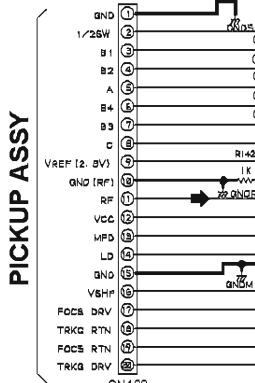
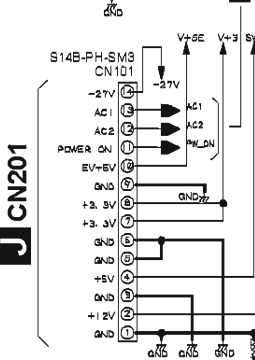
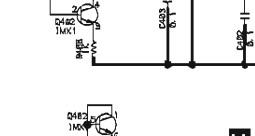
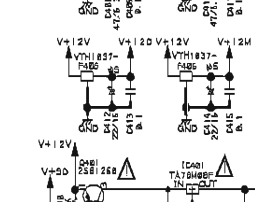
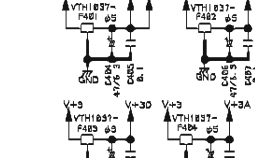
B

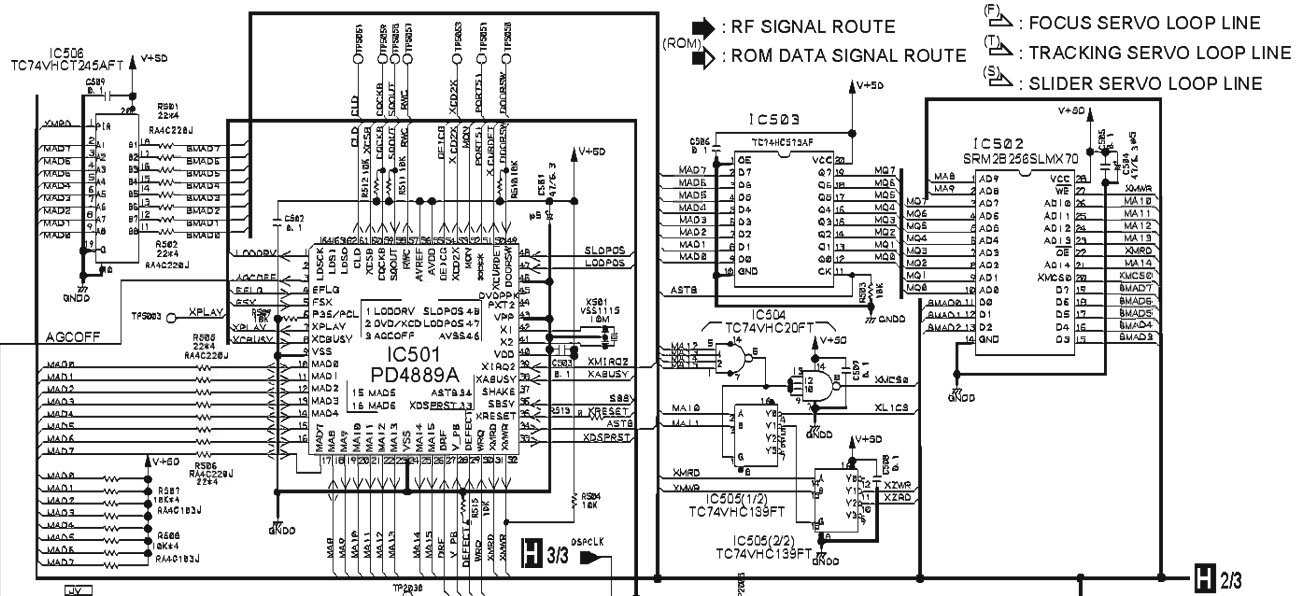


C

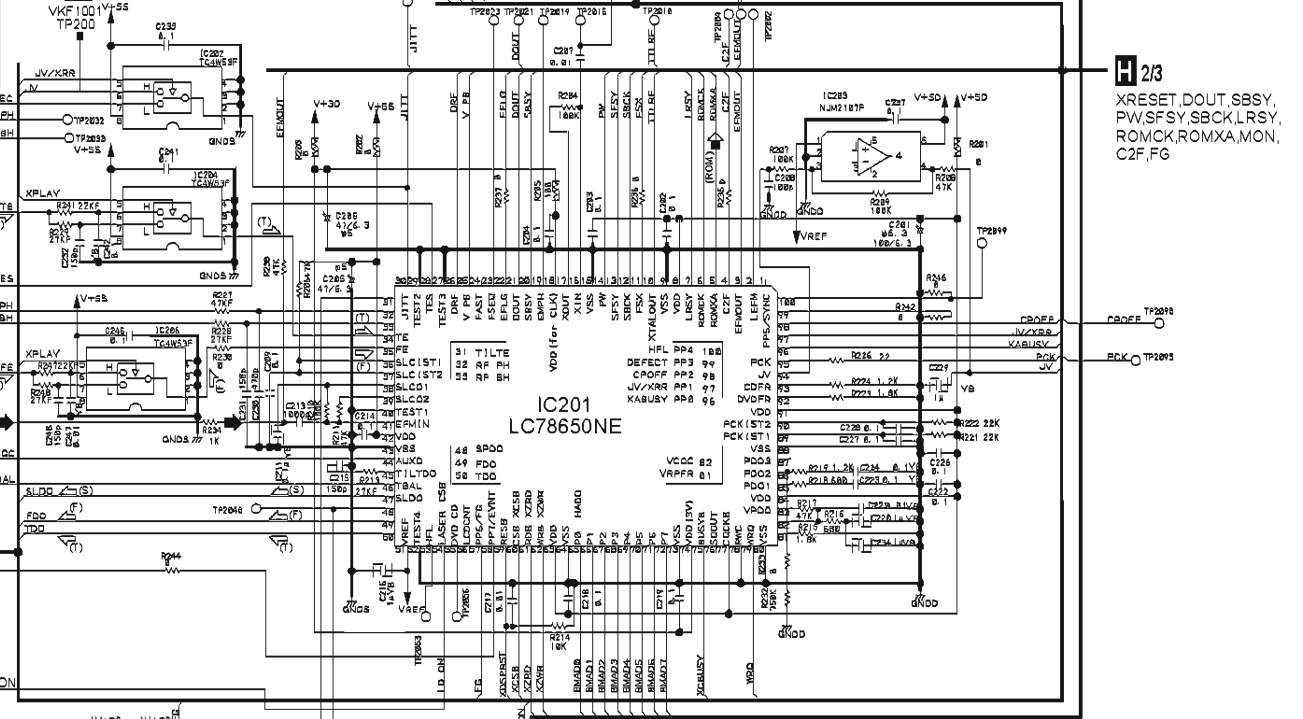


D

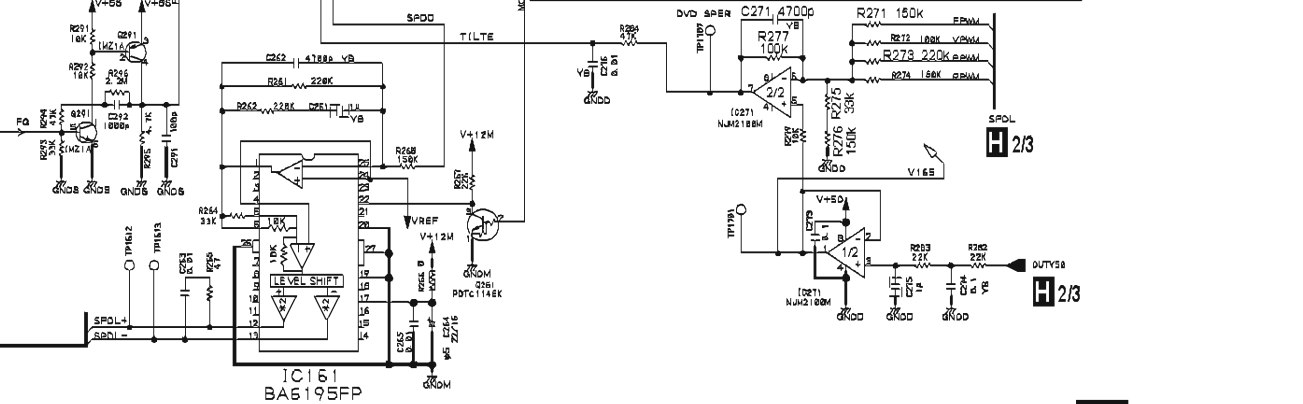




(RF) : RF SIGNAL ROUTE  
 (ROM) : ROM DATA SIGNAL ROUTE  
 (F) : FOCUS SERVO LOOP LINE  
 (T) : TRACKING SERVO LOOP LINE  
 (S) : SLIDER SERVO LOOP LINE



XRESET, DOUT, SBSY,  
 PW, SF, SY, SBCK, LRSY,  
 ROMCK, ROMXA, MON,  
 C2F, FG

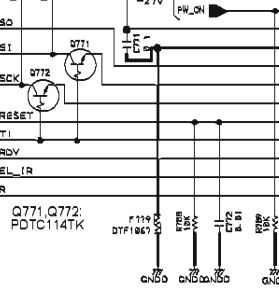
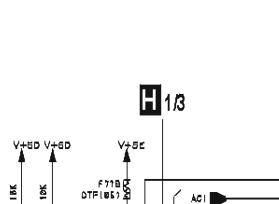
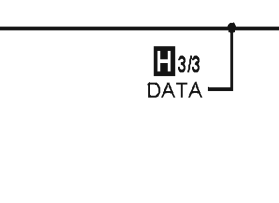
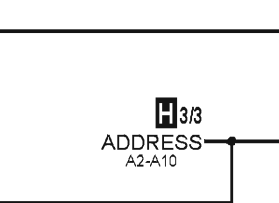
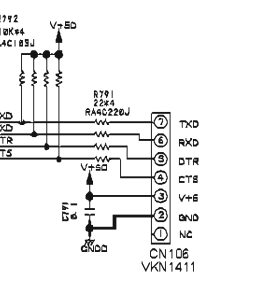
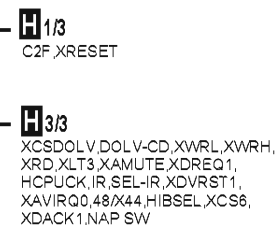
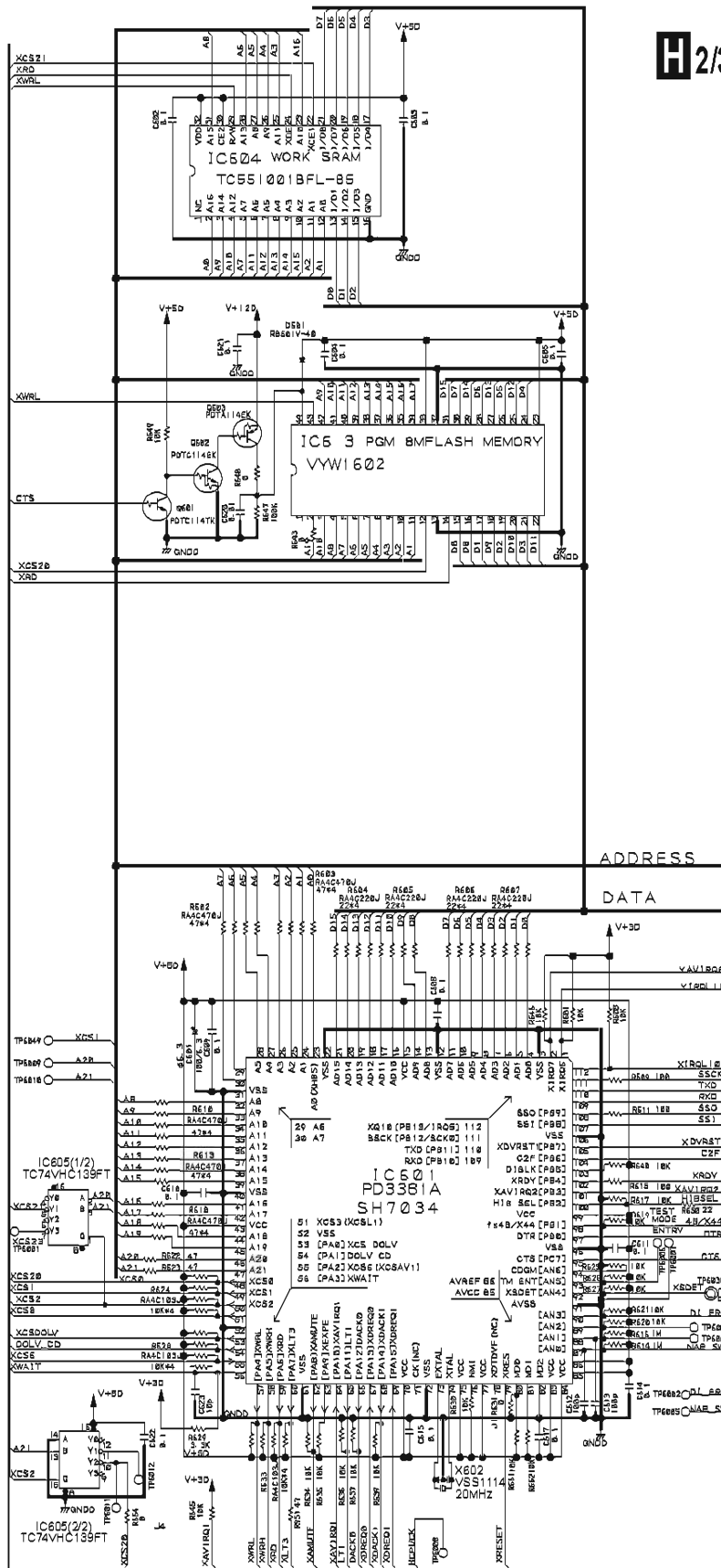


SPDL  
 V+1.2M  
 V+1.65  
 V+5.0  
 DUTY58

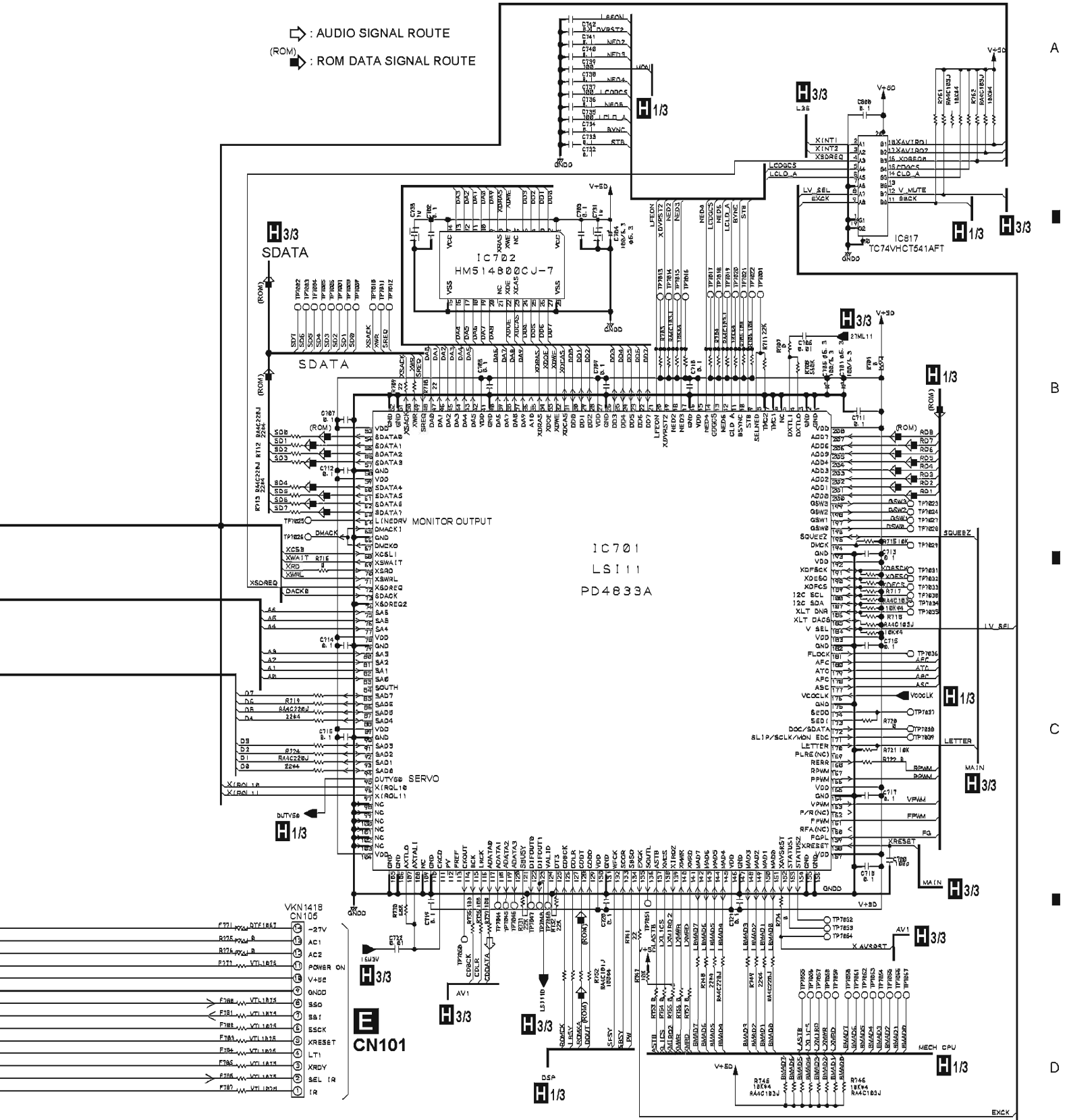


### 3.4 DVDM ASSY(2/3)

### H 2/3 DVDM ASSY(2/3) (PIVWS1371)



⇨ : AUDIO SIGNAL ROUTE  
 (ROM) ⇨ : ROM DATA SIGNAL ROUTE



# 3.5 DVDM ASSY(3/3)

## 3/3 DVDM ASSY(3/3) (PIVWS1371)

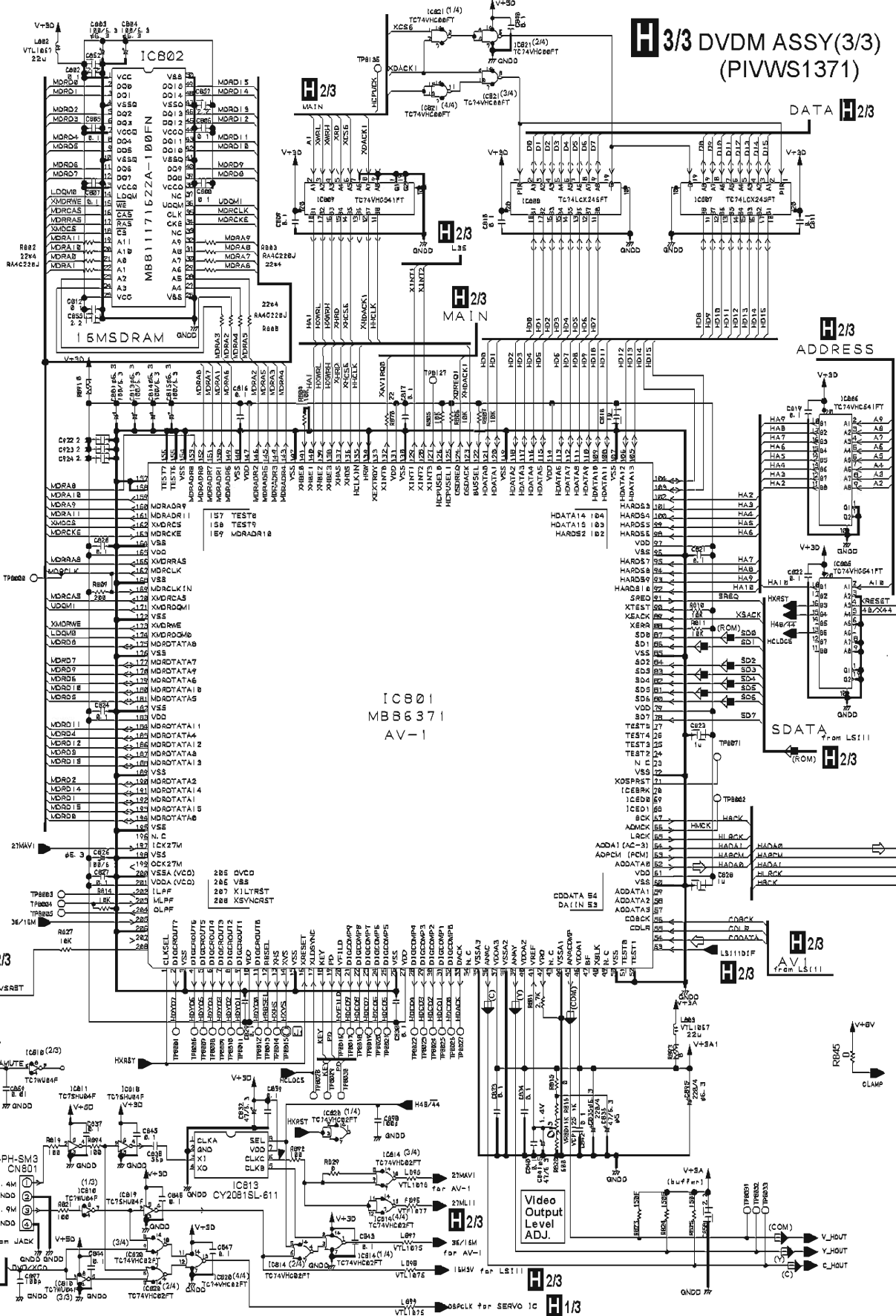
A

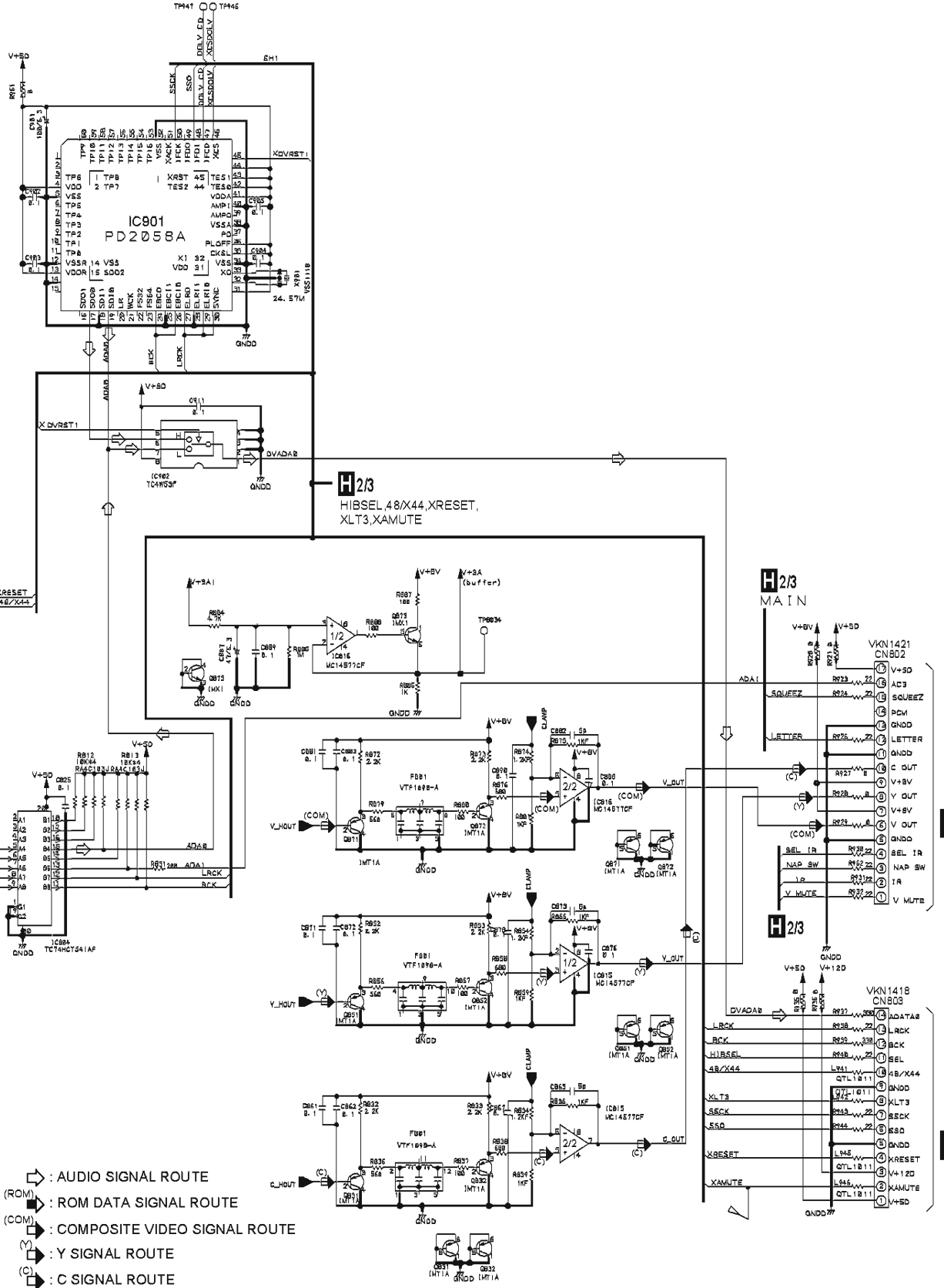
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C

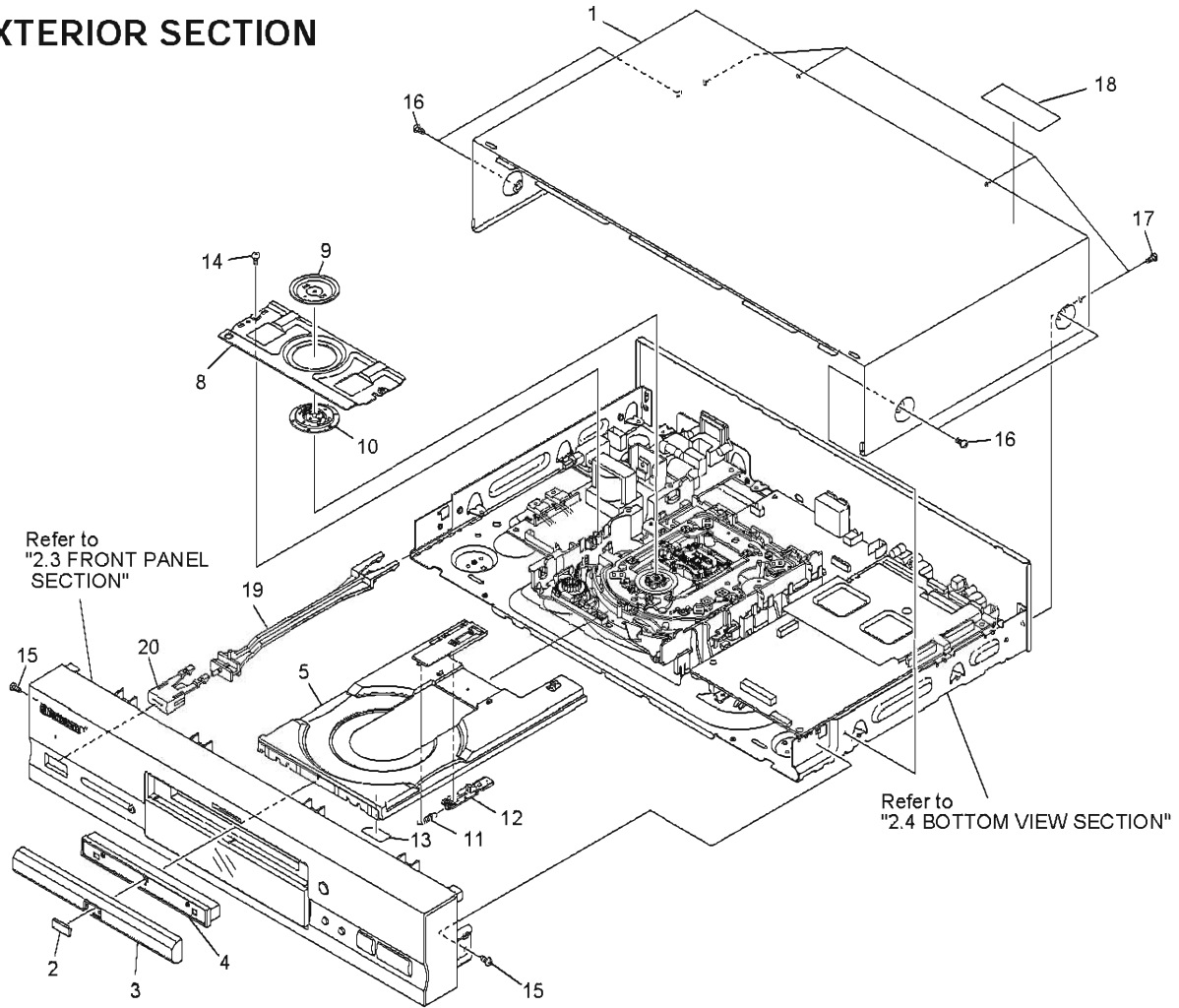
D

18





## 2.2 EXTERIOR SECTION

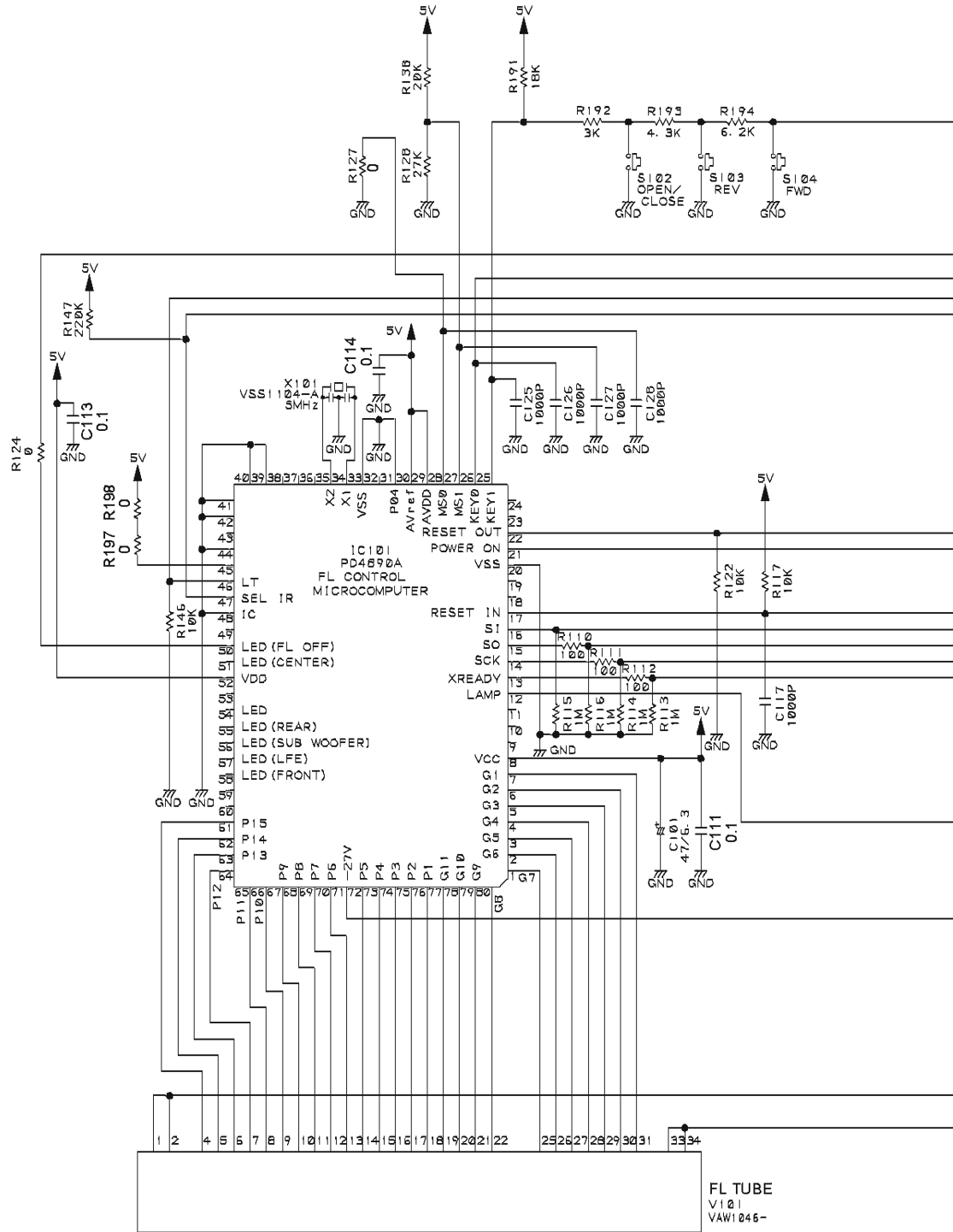


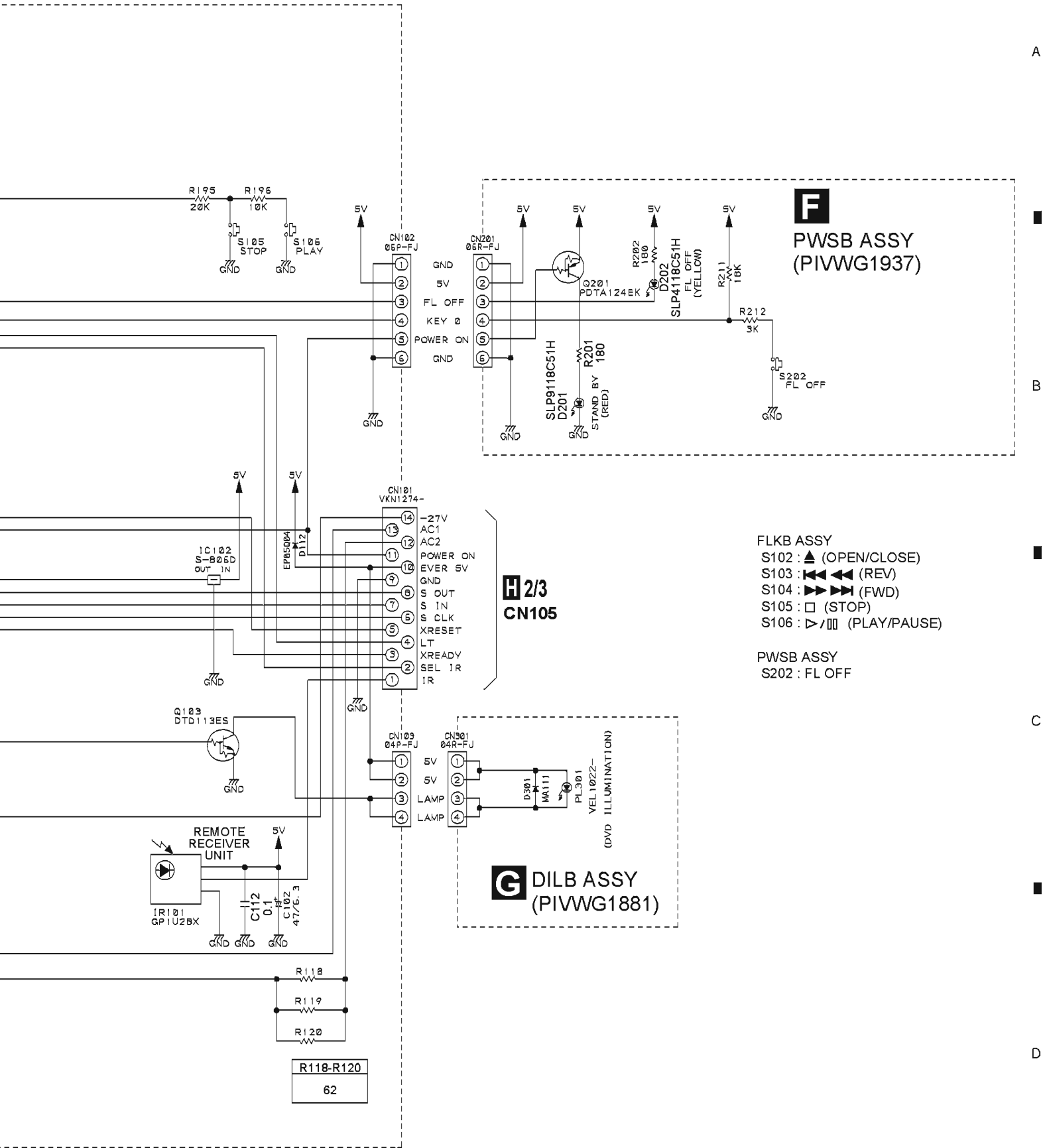
### (1) EXTERIOR SECTION PARTS LIST

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Bonnet Case S	PIVXX2539	12	Tray Stopper	PIVNL1739
2	DVD Plate	PIVAM1075	13	Tray Label	PIVRW1628
3	Tray Panel Plate	PIVNK4372	14	Screw	PIBPZ26P080FZK
4	Tray Panel	PIVNK4158	15	Screw	PIIBZ30P080FMC
5	Tray	PIVNL1731	16	Screw	PIBCZ40P060FNI
6	.....		17	Screw	PIBBZ30P080FMC
7	.....		18	Caution Label	PIVRW1697
8	Bridge	PIVNE2069	19	Power Button Joint	PIVNK4179
9	Clamper Plate	PIVNE2068	20	Power Button	PIVNK4374
10	Clamper	PIVNL1738			
11	Tray Stopper Spring	PIVBH1277			

### 3.2 FLKB, PWSB AND DILB ASSEMBLIES

**E** FLKB ASSY  
(PIVWG1876)





**F**  
PWSB ASSY  
(PIVWG1937)

**H** 2/3  
CN105

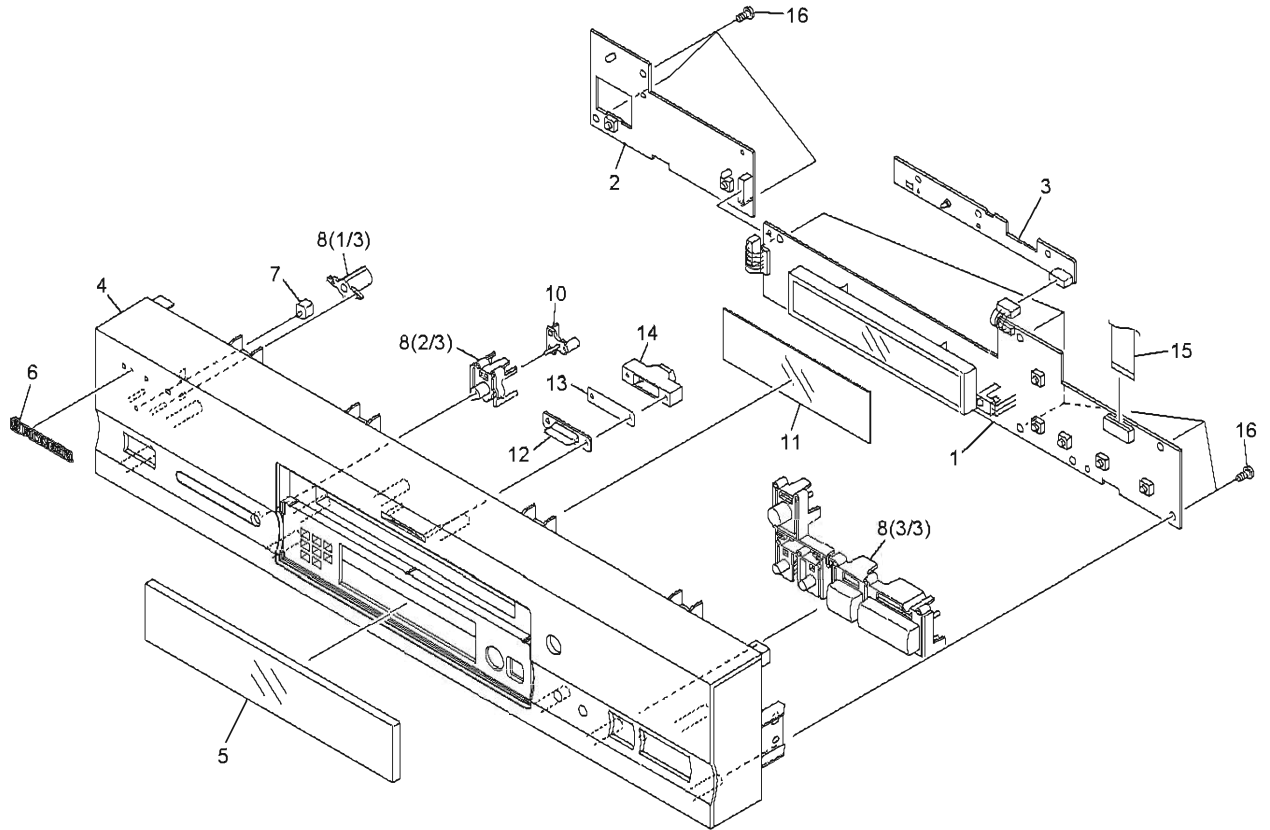
**G** DILB ASSY  
(PIVWG1881)

- FLKB ASSY  
 S102 : ▲ (OPEN/CLOSE)  
 S103 : ◀◀◀◀ (REV)  
 S104 : ▶▶▶▶ (FWD)  
 S105 : □ (STOP)  
 S106 : ▷/▢ (PLAY/PAUSE)

- PWSB ASSY  
 S202 : FL OFF

R118-R120  
62

## 2.3 FRONT PANEL SECTION



### (1) FRONT PANEL SECTION PARTS LIST

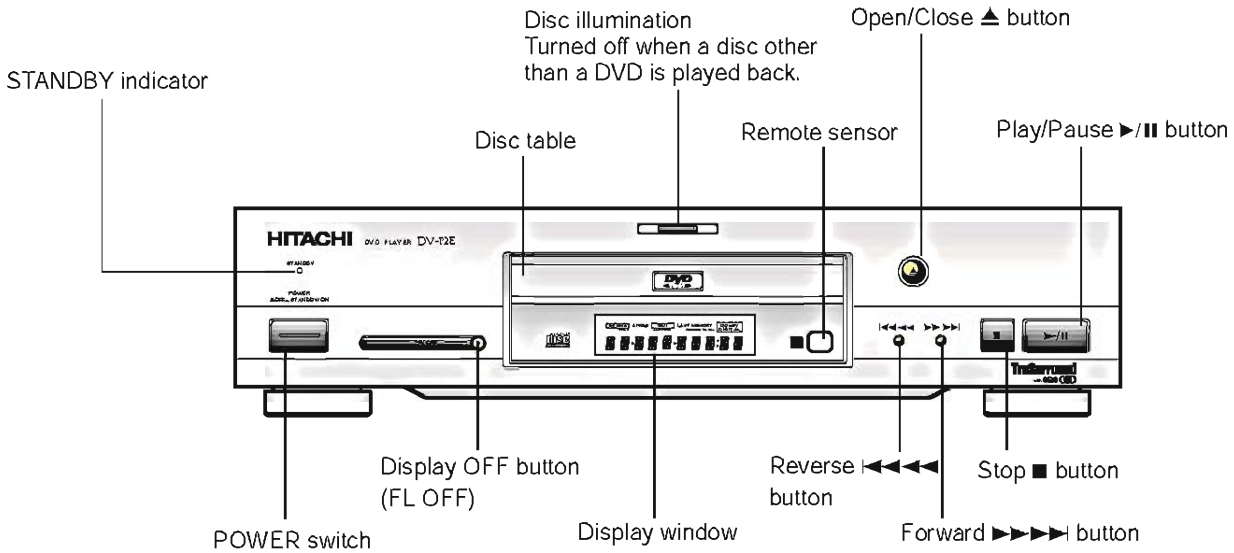
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	FLKB Assy	PIVWG1876	11	FL Filter	PIVEC1643	
NSP	2	PWSB Assy	PIVWG1937	12	Illumination Lens	PIVNK4168	
NSP	3	DILB Assy	PIVWG1881	13	Illumination Filter	PIVEC2012	
	4	Front Panel	PIVNK4375	14	Illumination Holder	PIVNK4098	
	5	FL Lens	PIVNK4376	15	Flexible Cable (14P) (FLKB CN101 – DVDM CN105)	PIVDA1646	
	6	Name Plate	PIVAM1084	16	Screw	PIBBZ30P080FMC	
	7	LED Lens	PIPNW2019				
	8	Main Key	PIVNK4373				
	9	.....					
	10	PLAY Lens	PIRNK2232				



# 8. PANEL FACILITIES AND SPECIFICATIONS

## 8.1 PANEL FACILITIES


### FRONT PANEL




### REAR PANEL

#### Digital Output Jack (Coaxial)

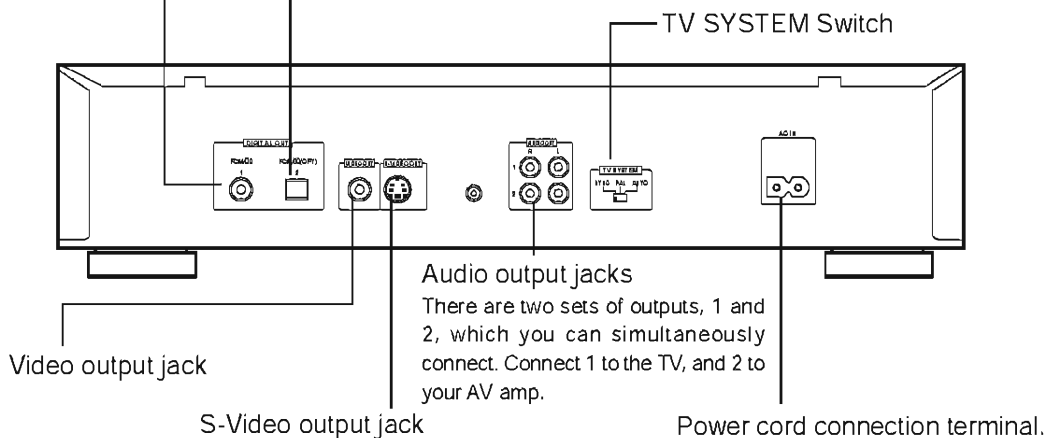
This is used for output of the digital audio signal recorded on CDs and Video CDs. Depending on the components you connect this digital output to, noise may be generated.

When connecting to an AC-3 compatible component, use the PCM/  jack. (Refer to the chart on the right.)

Your amp	Regular AV amp	Coaxial	Connect to the coaxial jack, and select PCM from the menu.
		Optical	Connect to the optical jack, and select PCM from the menu.
	AC-3 compatible amp	Coaxial	Connect to the PCM/  jack, and select PCM/DOLBY DIGITAL from the menu.
		Optical	Connect to the optical jack, and select PCM/DOLBY DIGITAL from the menu.

#### Optical Digital Output

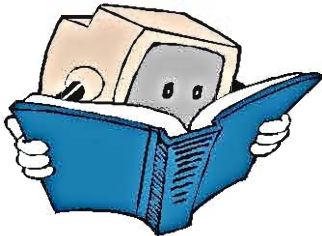
Audio optical digital output. Switchable between PCM/DOLBY DIGITAL and PCM output.





# HITACHI

No. 0201



## SERVICE MANUAL MANUEL D'ENTRETIEN WARTUNGSHANDBUCH

DV-P2E

### CAUTION:

Before servicing this chassis, it is important that the service technician read the "Safety Precautions" and "Product Safety Notices" in this service manual.

### ATTENTION:

Avant d'effectuer l'entretien du châssis, le technicien doit lire les «Précautions de sécurité» et les «Notices de sécurité du produit» présentés dans le présent manuel.

### VORSICHT:

Vor Öffnen des Gehäuses hat der Service-Ingenieur die „Sicherheitshinweise“ und „Hinweise zur Produktsicherheit“ in diesem Wartungshandbuch zu lesen.

Data contained within this Service manual is subject to alteration for improvement.

Les données fournies dans le présent manuel d'entretien peuvent faire l'objet de modifications en vue de perfectionner le produit.

Die in diesem Wartungshandbuch enthaltenen Spezifikationen können sich zwecks Verbesserungen ändern.

TECHNICAL SPECIFICATIONS

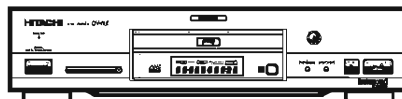
SPÉCIFICATIONS TECHNIQUES

TECHNICAL SPECIFICATIONS

December 1998

# Service Manual

# HITACHI



DVD PLAYER

# DV-P2E

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL.

Model	Power Requirement	Regional restriction code
DV-P2E	AC 220 - 240V	2

- Refer to the service guide for DV-P2E.  
IC information is described in the service guide.

## CONTENTS

1. SAFETY INFORMATION .....	2	7. GENERAL INFORMATION .....	46
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3. SCHEMATIC DIAGRAM .....	10	7.2 BLOCK DIAGRAM .....	47
4. PCB CONNECTION DIAGRAM .....	24	8. PANEL FACILITIES AND SPECIFICATIONS ....	48
5. PCB PARTS LIST .....	33		
6. ADJUSTMENT .....	38		

# 1. SAFETY INFORMATION

This service manual is intended for qualified service technicians ; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

— IMPORTANT —

THIS HITACHI APPARATUS CONTAINS LASER OF CLASS 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

— LASER DIODE CHARACTERISTICS —

MAXIMUM OUTPUT POWER : 7 mw  
WAVELENGTH : 650 nm

## LABEL CHECK

**CLASS 1  
LASER PRODUCT**

(Printed on the Rear Panel)

**CAUTION** : LASER RADIATION WHEN OPEN.  
: AVOID EXPOSURE TO BEAM.

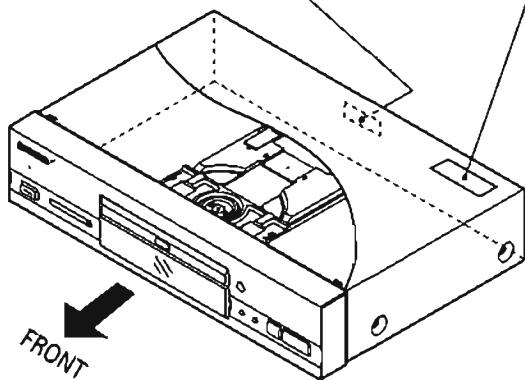
**VORSICHT** : LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET  
: NICHT DEM STRAHL AUSSETZEN!

**ADVARSEL** : LASERSTRÅLING VED ÅPNING UNDGA  
: UDSÆTTELSE FOR STRÅLING.

**VARNING** : LASERSTRÅLNING NÄR DENNA DEL ÄR  
: ÖPPNAD BETRÄKTA EJ STRÅLEN.

**VARO!** : AVATTAESSA ALTISTUT LASERSÄTEILYLLE.  
: ÄLÄ KATSO SÄTEESÄN.

VFW1697



### Additional Laser Caution

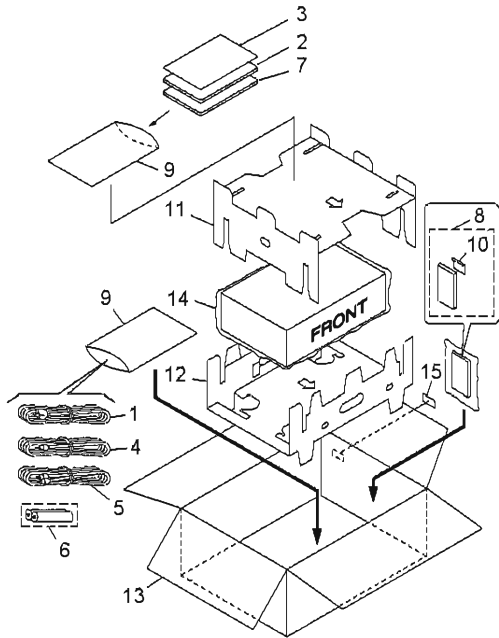
1. Inside detection switch (S201 on the INSB assy) and loading-status detection switch (S301 on the LOSB assy) are detected by the microprocessor (IC501 in the DVDM assy).  
 • To permit the laser diode to oscillate, it is required to set the inside detection switch for the inside position (S201 : ON) and to set the loading-status detection switch for the clamp position (the center terminal of S301 is shorted to +5V). The laser diode oscillation will continue if pin 13 of IC101 is shorted to +5V (fault condition) in the DVDM assy.  
 In the test mode \*, the laser diode oscillates when microprocessor detects a PLAY signal, or when the PLAY key is pressed (S107 ON in the FLKB assy), with the above requirements satisfied.
2. When the cover is open, close viewing through the objective lens with the naked eye will cause exposure to the laser beam.

\* : Refer to page 40.

## 2. EXPLODED VIEWS AND PARTS LIST

- NOTES:
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
  - The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
  - Screws adjacent to  $\nabla$  mark on the product are used for disassembly.

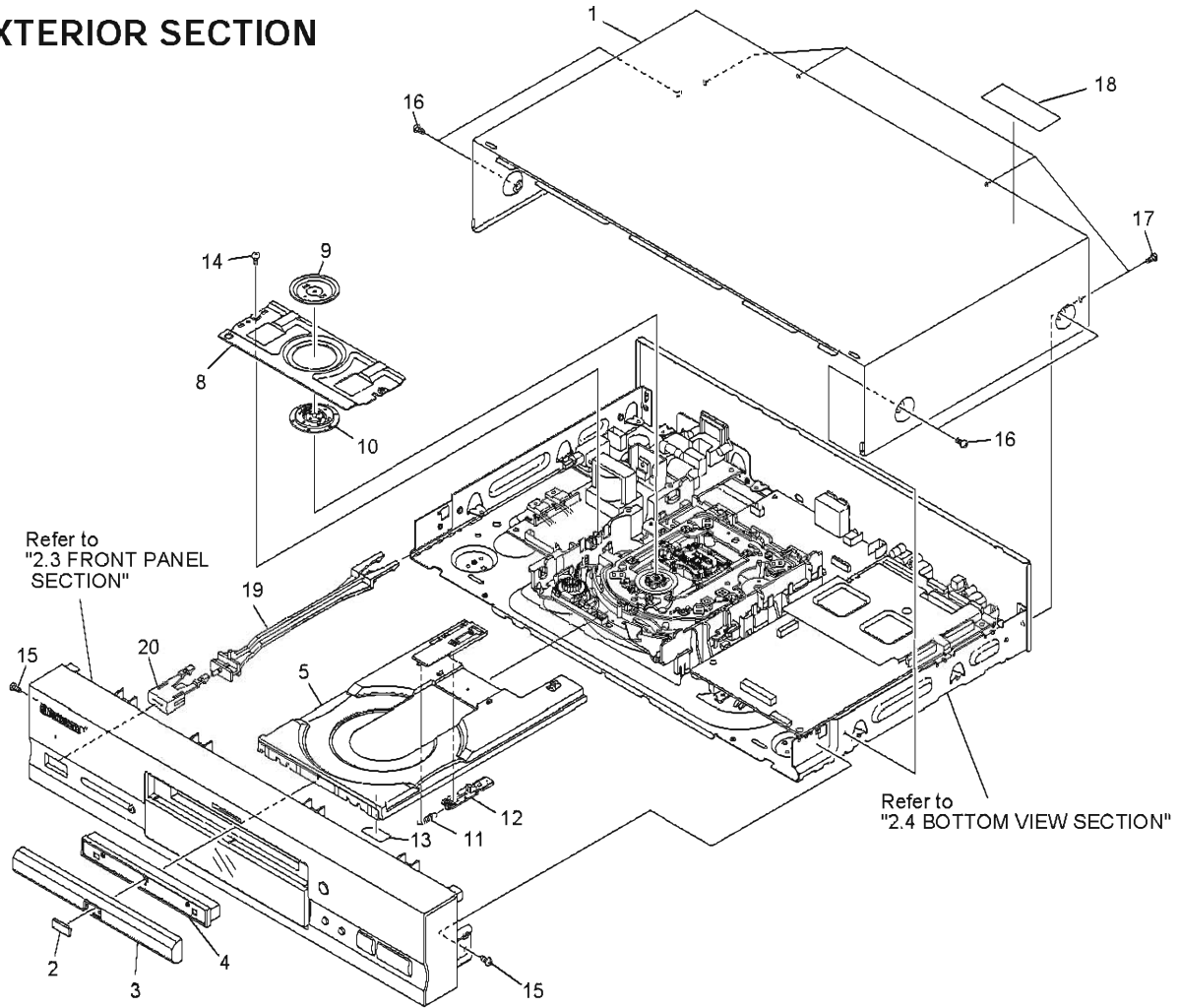
### 2.1 PACKING



### (1) PACKING PARTS LIST

Mark	No.	Description	Part No.
$\Delta$	1	Power Cord	PIADG1154
	2	Operating Instructions (English/French/German/Italian))	PIVRE1075
	3	Caution	PIVRR1037
	4	Audio Cord (L=1.5m)	PIVDE1033
	5	Video Cord (L=1.5m)	PIVDE1048
NSP	6	Dry Cell Battery (R6P, AA)	PIVEM-013
	7	Operating Instructions (Spanish/Portuguese/Dutch/Swedish)	PIVRF1046
	8	Remote Control Unit	PIVXX2595
	9	Polyethylene Bag	PIVHL1046
	10	Battery Cover	PIVNK3703
	11	Protector A	PIVHB1060
	12	Protector B	PIVHB1061
	13	Packing Case	PIVHG1765
	14	Mirror Mat Sheet	PIZ23-007
	15	Serial Number Label	PIRRW-168

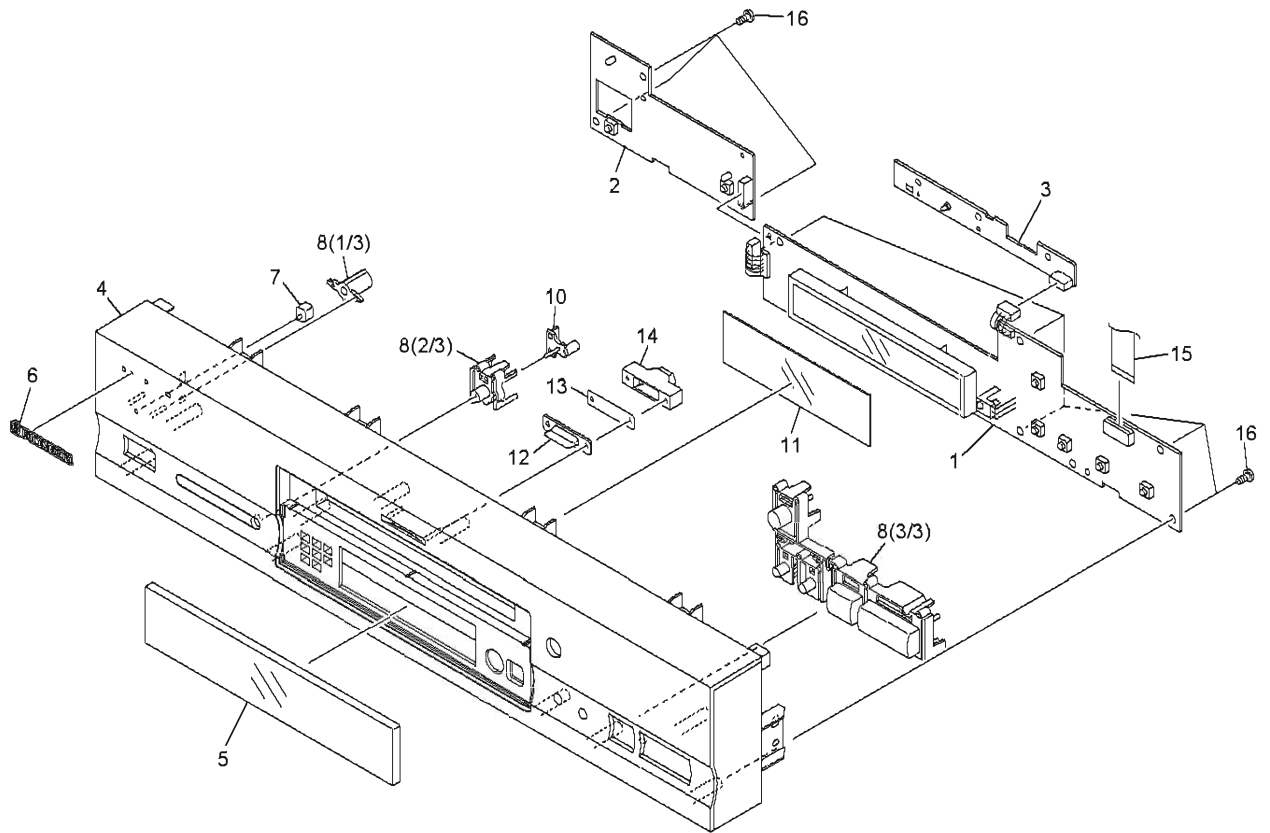
## 2.2 EXTERIOR SECTION



### (1) EXTERIOR SECTION PARTS LIST

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Bonnet Case S	PIVXX2539	12	Tray Stopper	PIVNL1739
2	DVD Plate	PIVAM1075	13	Tray Label	PIVRW1628
3	Tray Panel Plate	PIVNK4372	14	Screw	PIBPZ26P080FZK
4	Tray Panel	PIVNK4158	15	Screw	PIIBZ30P080FMC
5	Tray	PIVNL1731	16	Screw	PIBCZ40P060FNI
6	.....		17	Screw	PIBBZ30P080FMC
7	.....		18	Caution Label	PIVRW1697
8	Bridge	PIVNE2069	19	Power Button Joint	PIVNK4179
9	Clamper Plate	PIVNE2068	20	Power Button	PIVNK4374
10	Clamper	PIVNL1738			
11	Tray Stopper Spring	PIVBH1277			

## 2.3 FRONT PANEL SECTION

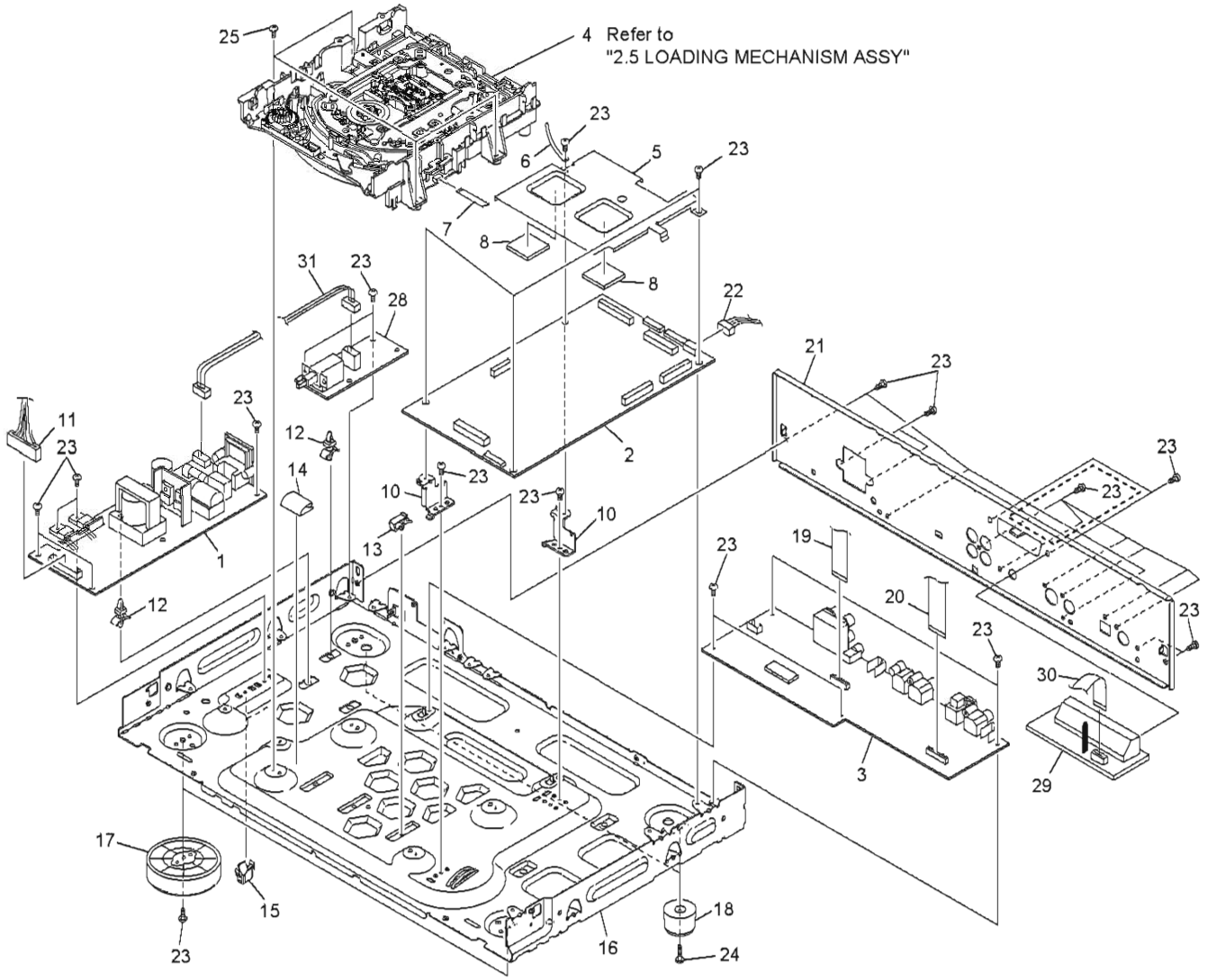


### (1) FRONT PANEL SECTION PARTS LIST

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	FLKB Assy	PIVWG1876	11	FL Filter	PIVEC1643	
NSP	2	PWSB Assy	PIVWG1937	12	Illumination Lens	PIVNK4168	
NSP	3	DILB Assy	PIVWG1881	13	Illumination Filter	PIVEC2012	
	4	Front Panel	PIVNK4375	14	Illumination Holder	PIVNK4098	
	5	FL Lens	PIVNK4376	15	Flexible Cable (14P) (FLKB CN101 – DVDM CN105)	PIVDA1646	
	6	Name Plate	PIVAM1084	16	Screw	PIBBZ30P080FMC	
	7	LED Lens	PIPNW2019				
	8	Main Key	PIVNK4373				
	9	.....					
	10	PLAY Lens	PIRNK2232				



## 2.4 BOTTOM VIEW SECTION



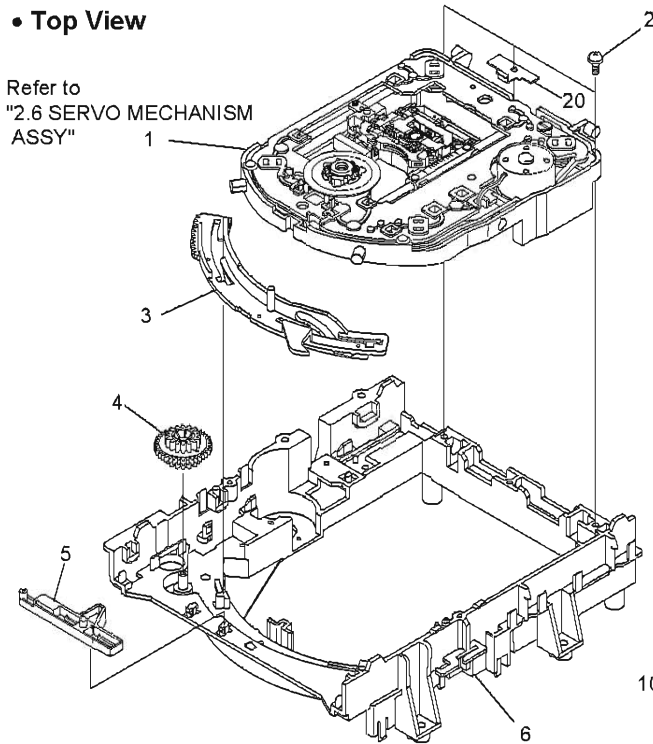
### (1) BOTTOM VIEW SECTION PARTS LIST

Mark	No.	Description	Part No.
△	1	POWER SUPPLY Assy	PIVWR1285
	2	DVDM Assy	PIVWS1371
	3	AVJB Assy	PIVWV1575
NSP	4	Loading Mechanism Assy	PIVWT1147
	5	Heat Sink	PIVNE2134
NSP	6	Cord Stopper	PIZCB-069Z
	7	Flexible Cable (12P) (LOSB CN301 – DVDM CN107)	PIVDA1648
	8	Radiation Seat	PIVEB1282
	9	.....	
NSP	10	PCB Holder	PIVNE2122
	11	Housing Assy (14P) (POWER SUPPLY CN201 – DVDM CN101)	PIVKP2161
NSP	12	PCB Holder	PIPNW2100
	13	Clamp	PIDEC2007
	14	Shell Clip	PIDEC1184
	15	Guard	PIVNK4100

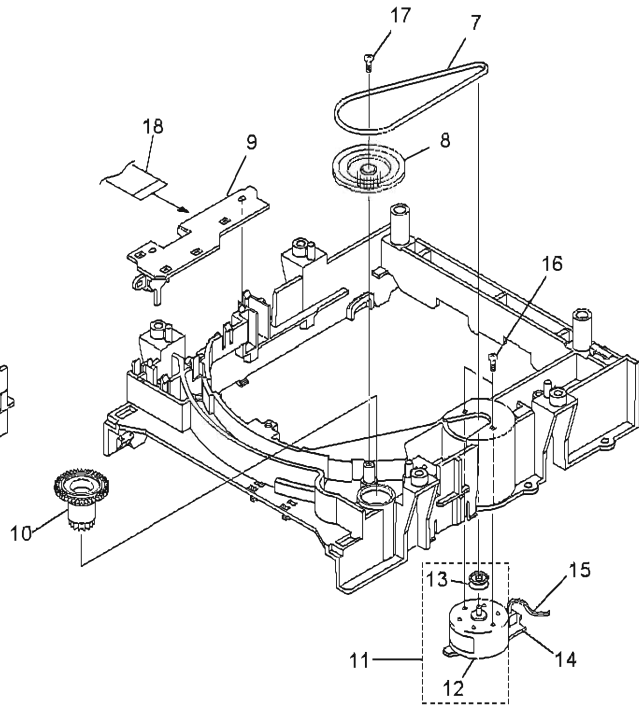
Mark	No.	Description	Part No.
NSP	16	Chassis	PIVNA1876
	17	Insulator	PIPNW2766
NSP	18	Insulator Assy	PIVXA1680
	19	Flexible Cable (14P) (AVJB CN191 – DVDM CN803)	PIVDA1646
NSP	20	Flexible Cable (17P) (AVJB CN901 – DVDM CN802)	PIVDA1650
	21	Rear Panel	PIVNA2015
NSP	22	Housing Assy (4P) (DVDM CN801 – AVJB CN301)	PIVKP2157
	23	Screw	PIBBZ30P080FMC
NSP	24	Screw	PIBBZ30P180FMC
	25	Screw	PIBBZ30P100FMC
NSP	26	.....	
	27	.....	
NSP	28	MSWB Assy	PIVWG1882
	29	SCCB Assy	PIVWV1577
NSP	30	Flexible Cable (8P) (SCCB CN100 – AVJB CN19)	PIVDA1651
	31	Housing Assy (2P) (POWER SUPPLY CN102 – MSWB CN10)	PIVKP2160

## 2.5 LOADING MECHANISM ASSY

### • Top View



### • Bottom View



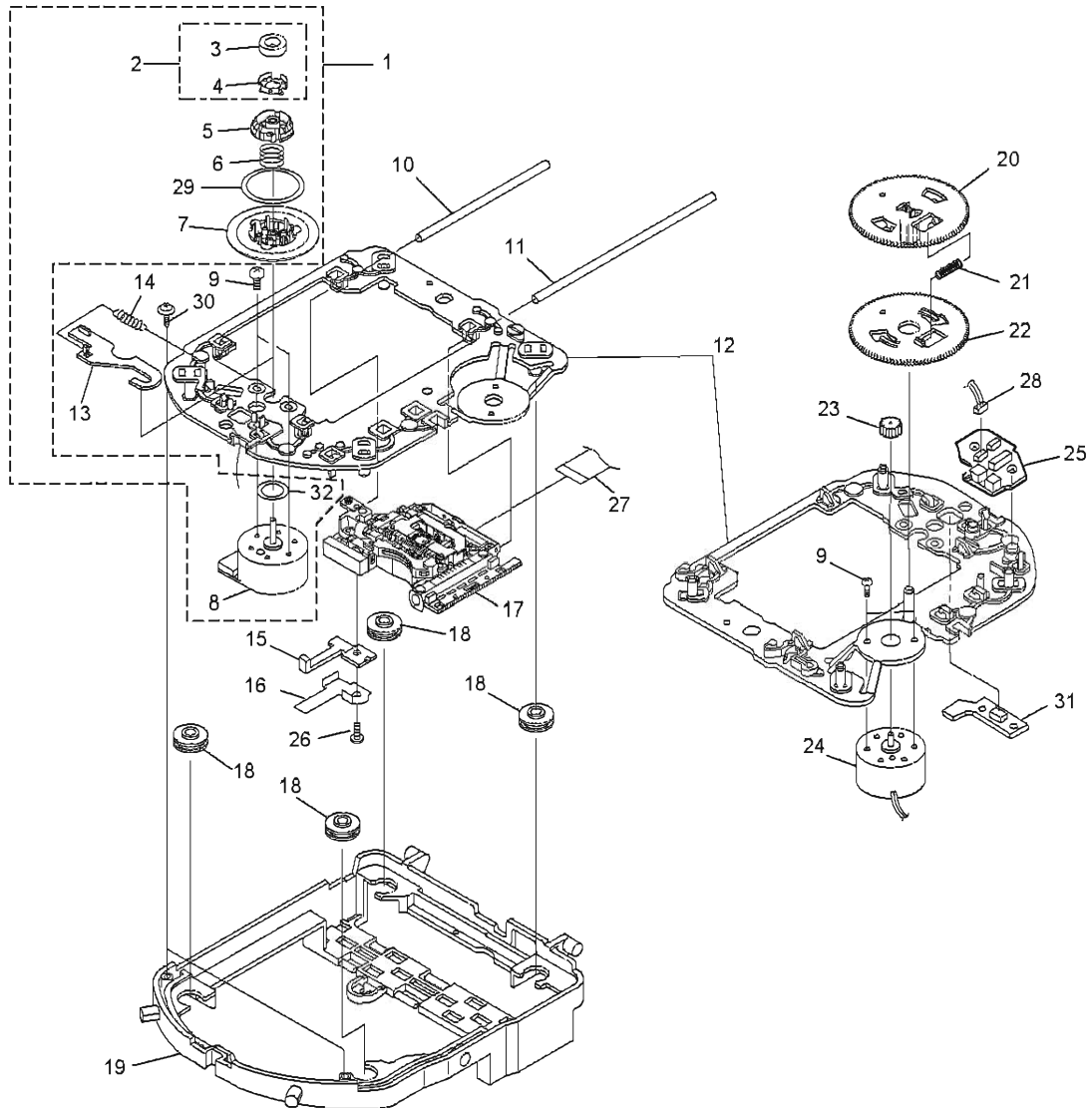
### • LOADING MECHANISM ASSY PARTS LIST

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Servo Mechanism Assy-S	PIVXX2538		11	Loading Motor Assy	PIVXX2505
	2	Screw	PIDBA1006		12	DC Motor	PIPX1027
	3	Drive Cam	PIVNL1736		13	Motor Pulley	PIP1634
	4	Drive Gear	PIVNL1735		14	LOMB Assy	PIVWG1886
	5	Lock Plate	PIVNL1737	NSP	15	Connector Assy (2P) (LOMB CN401 – LOSB CN303)	PIPG02KK-E35
	6	Loading Base	PIVNL1730		16	Screw	PIVBA1055
	7	Rubber Belt	PIVEB1260		17	Screw	PIZ39-019
	8	Gear Pulley	PIVNL1733		18	Flexible Cable (8P) (LOSB CN302 – INSB CN202)	PIVDA1649
NSP	9	LOSB Assy	PIVWG1885		19	•••••	
	10	Loading Gear	PIVNL1734		20	Stopper	PIDNH2076

## 2.6 SERVO MECHANISM ASSY

• Top View

• Bottom View



### • SERVO MECHANISM ASSY PARTS LIST

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Spindle Motor Assy	PIVXX2563		18	Floating Rubber	PIDEB1315
	2	Magnet Holder Assy	PIVXX2507		19	Float Base	PIVNL1732
NSP	3	Magnet	PIVYM1024		20	Gear D	PIVNL1766
NSP	4	Magnet Holder	PIVNE2070		21	Gear Spring	PIVBH1279
	5	Centering Ring	PIVNL1746		22	Gear E	PIVNL1767
	6	Centering Spring	PIVBH1278		23	Gear F	PIVNL1768
NSP	7	Disc Table	PIVNL1747		24	Motor	PIVXM1062
NSP	8	Motor	PIVXM1071	NSP	25	INSB Assy	PIVWG1883
	9	Screw	PIJGZ17P028FMC		26	Screw	PIPBZ20P050FMC
	10	Sub Guide Bar	PIVLL1489		27	Flexible Cable (20P) (DVDM CN102 – Pickup Assy)	PIVDA1680
	11	Guide Bar	PIVLL1488		28	Connector Assy (3P) (INSB CN201 – FGSA CN101)	PIVKP2150
	12	Mechanism Base	PIVNL1748	NSP	29	Table Sheet	PIDEC2040
	13	Hook	PIVNL1770		30	Screw	PIPBA1048
	14	Hook Spring	PIVBH1291	NSP	31	FGSA Assy	PIVWG1884
	15	Slider	PIVNL1745	NSP	32	Sheet	PIVEC1959
	16	HOLD SPRING	PIVNC1011				
NSP	17	Pickup Assy	PIVWY1046				

### 3. SCHEMATIC DIAGRAM

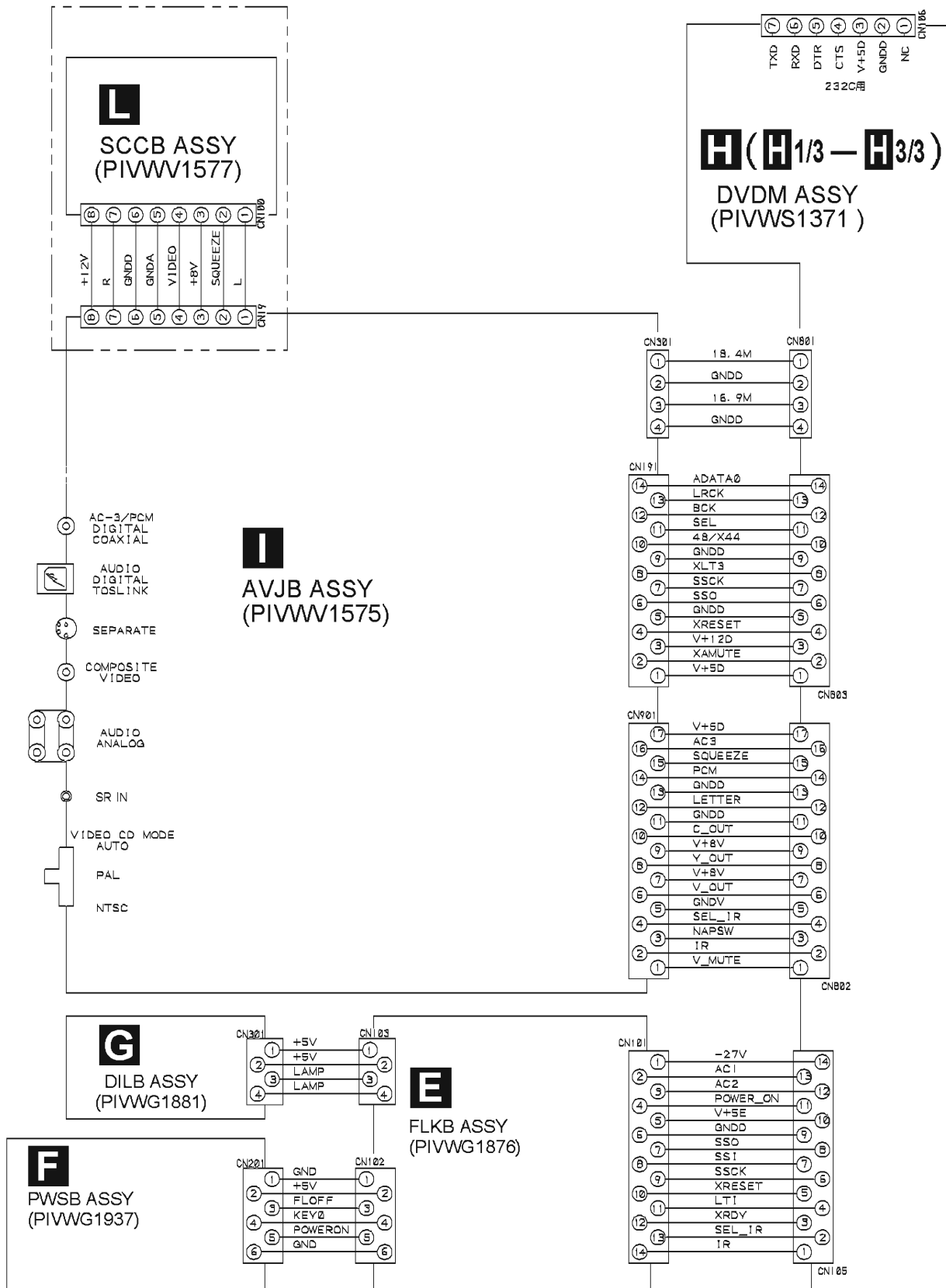
#### 3.1 OVERALL CONNECTION DIAGRAM, LOMB, LOSB, INSB AND FGSB ASSEMBLIES

A

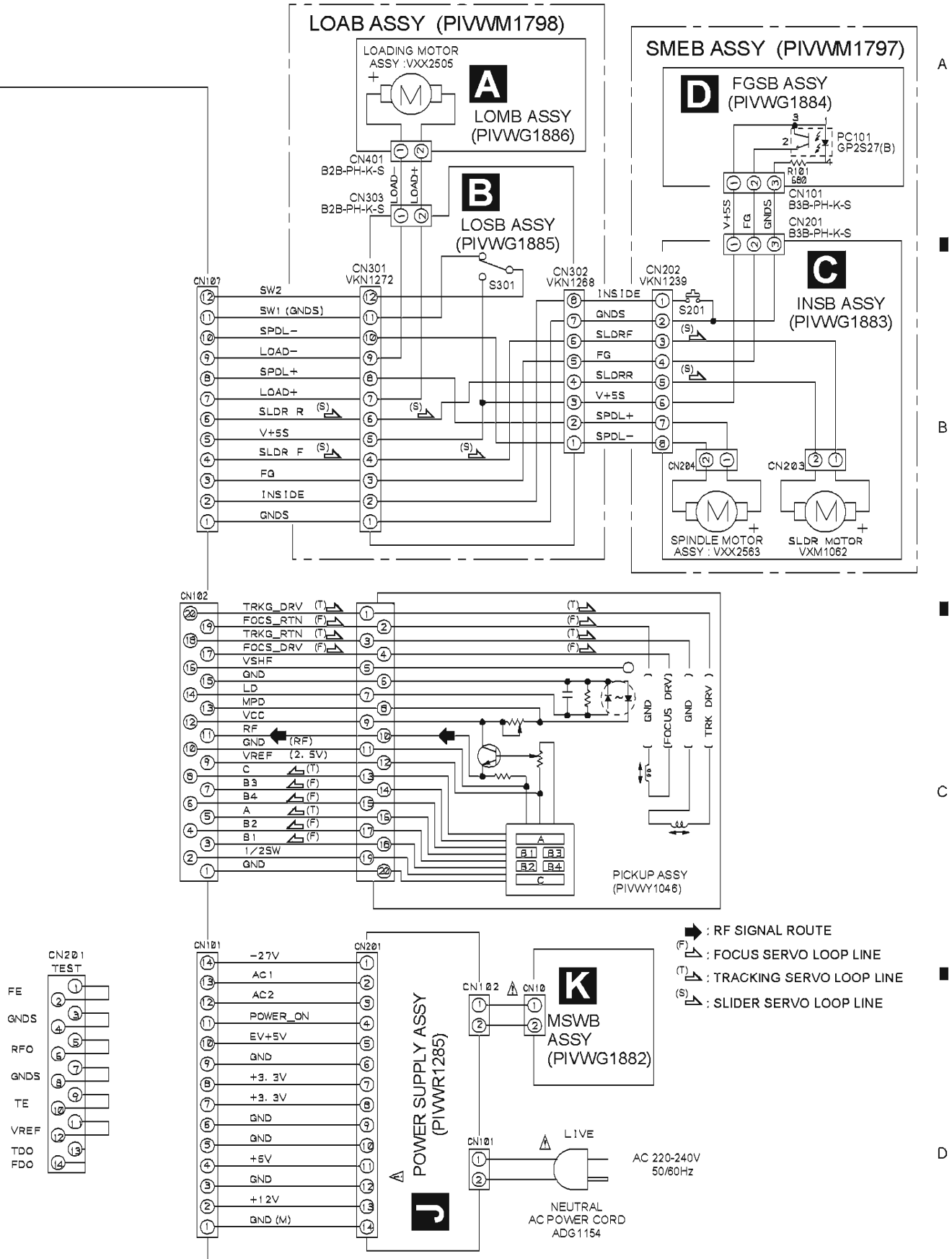
B

C

D

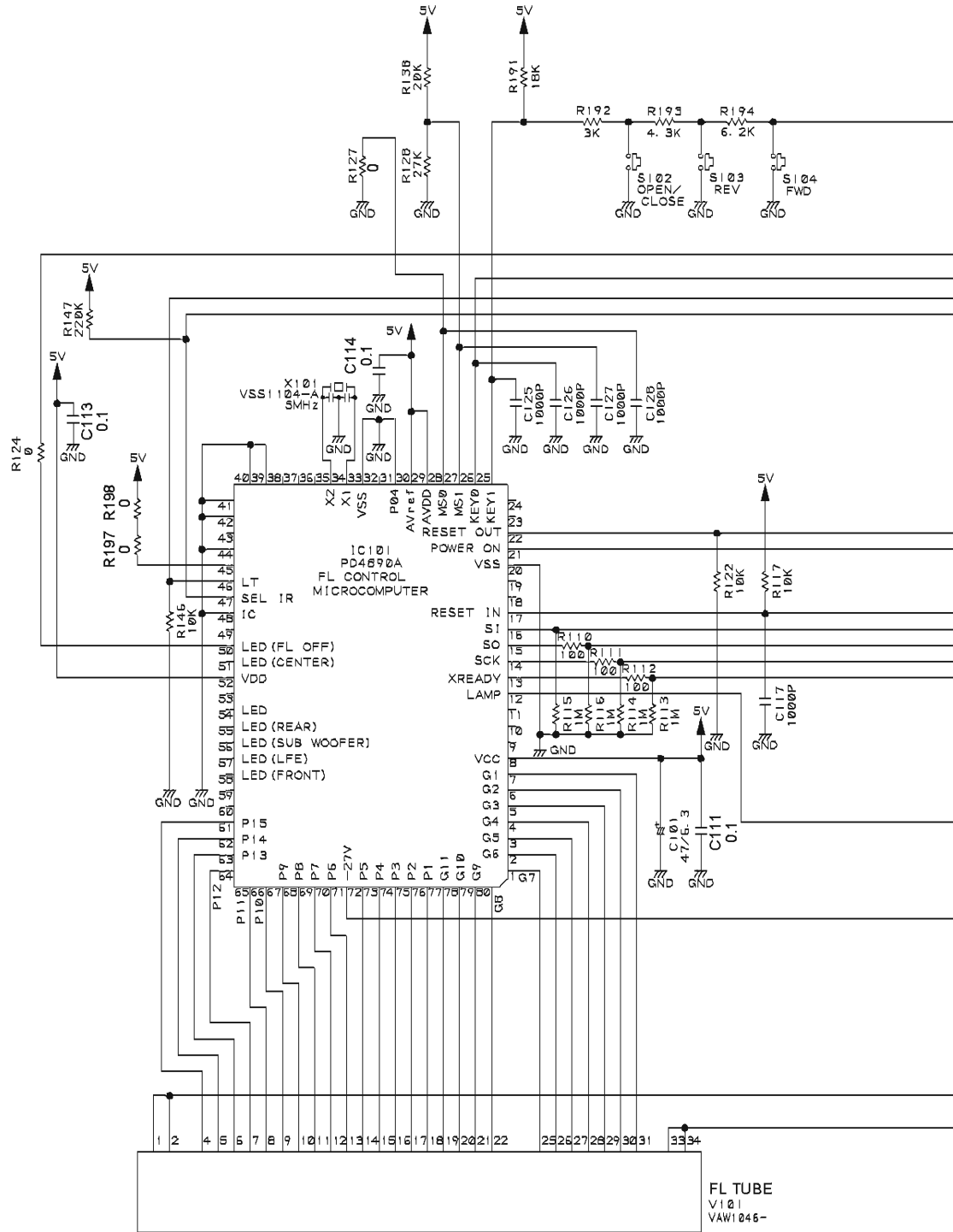


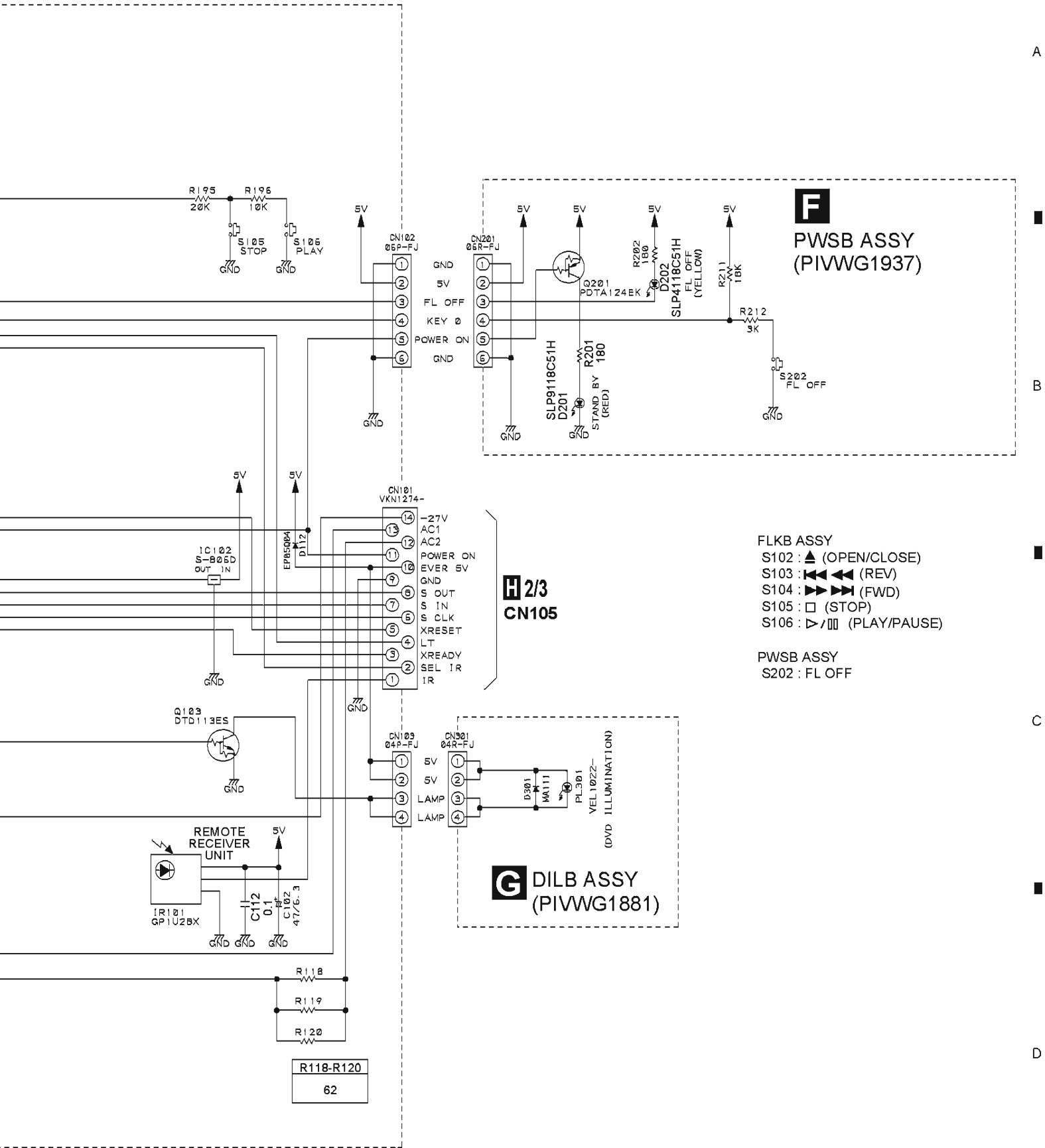
Note : When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".



### 3.2 FLKB, PWSB AND DILB ASSEMBLIES

**E** FLKB ASSY  
(PIVWG1876)





**F**  
PWSB ASSY  
(PIVWG1937)

- FLKB ASSY  
 S102 : ▲ (OPEN/CLOSE)  
 S103 : ◀◀◀◀ (REV)  
 S104 : ▶▶▶▶ (FWD)  
 S105 : □ (STOP)  
 S106 : ▷/▢ (PLAY/PAUSE)

- PWSB ASSY  
 S202 : FL OFF

**H** 2/3  
CN105

**G** DILB ASSY  
(PIVWG1881)

R118-R120  
62



### 3.3 DVDM ASSY(1/3)

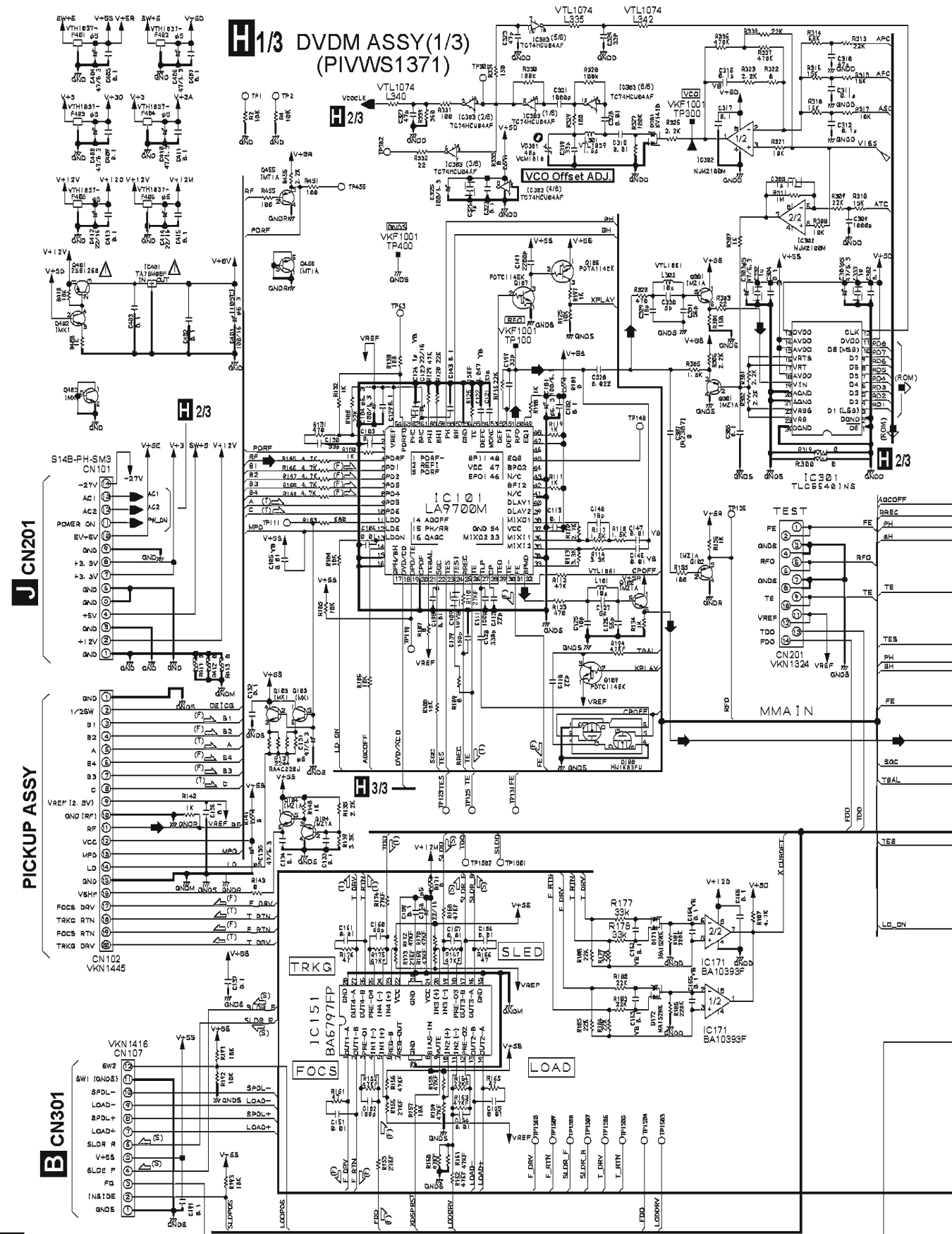
A

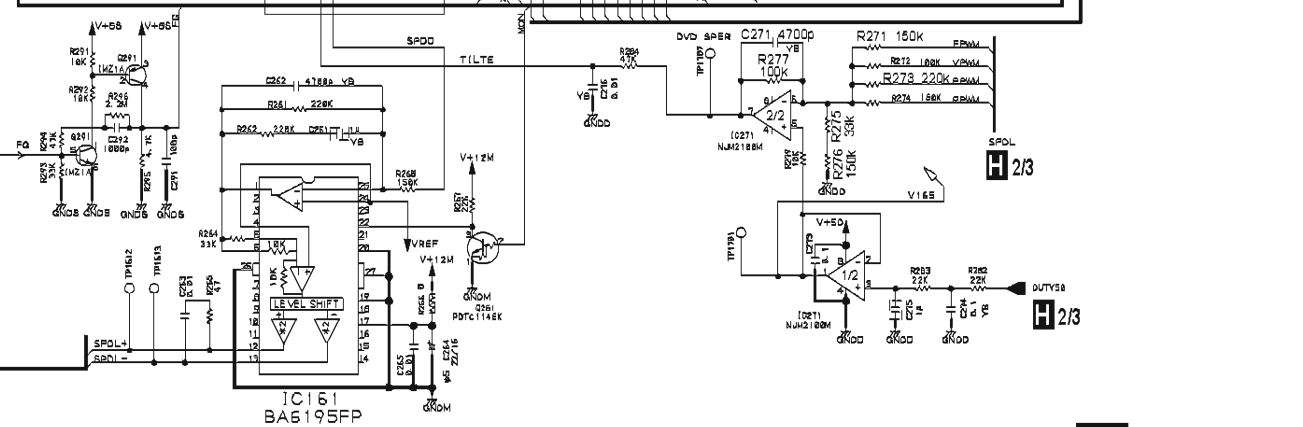
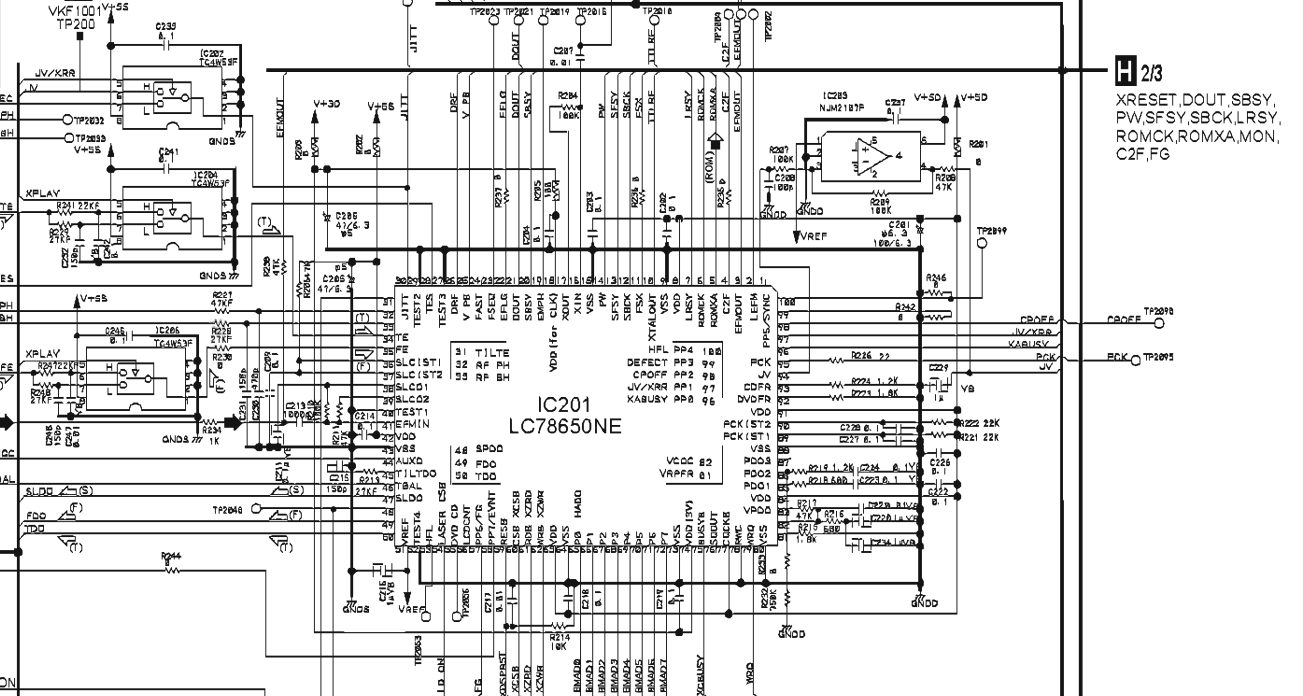
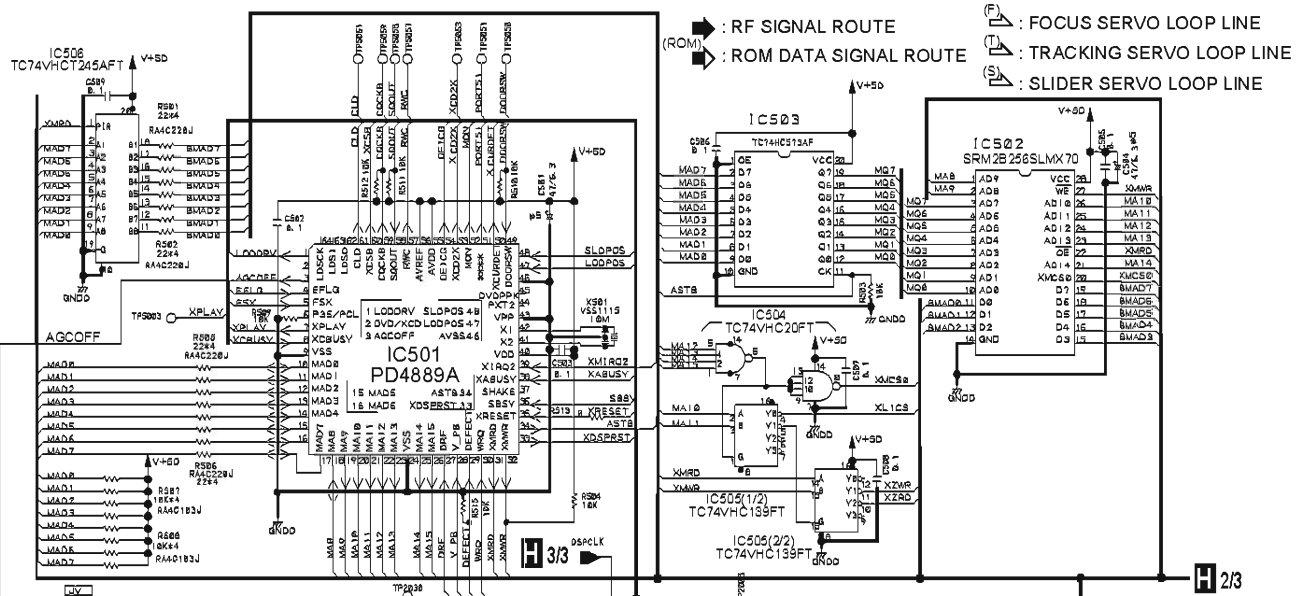
B

C

D

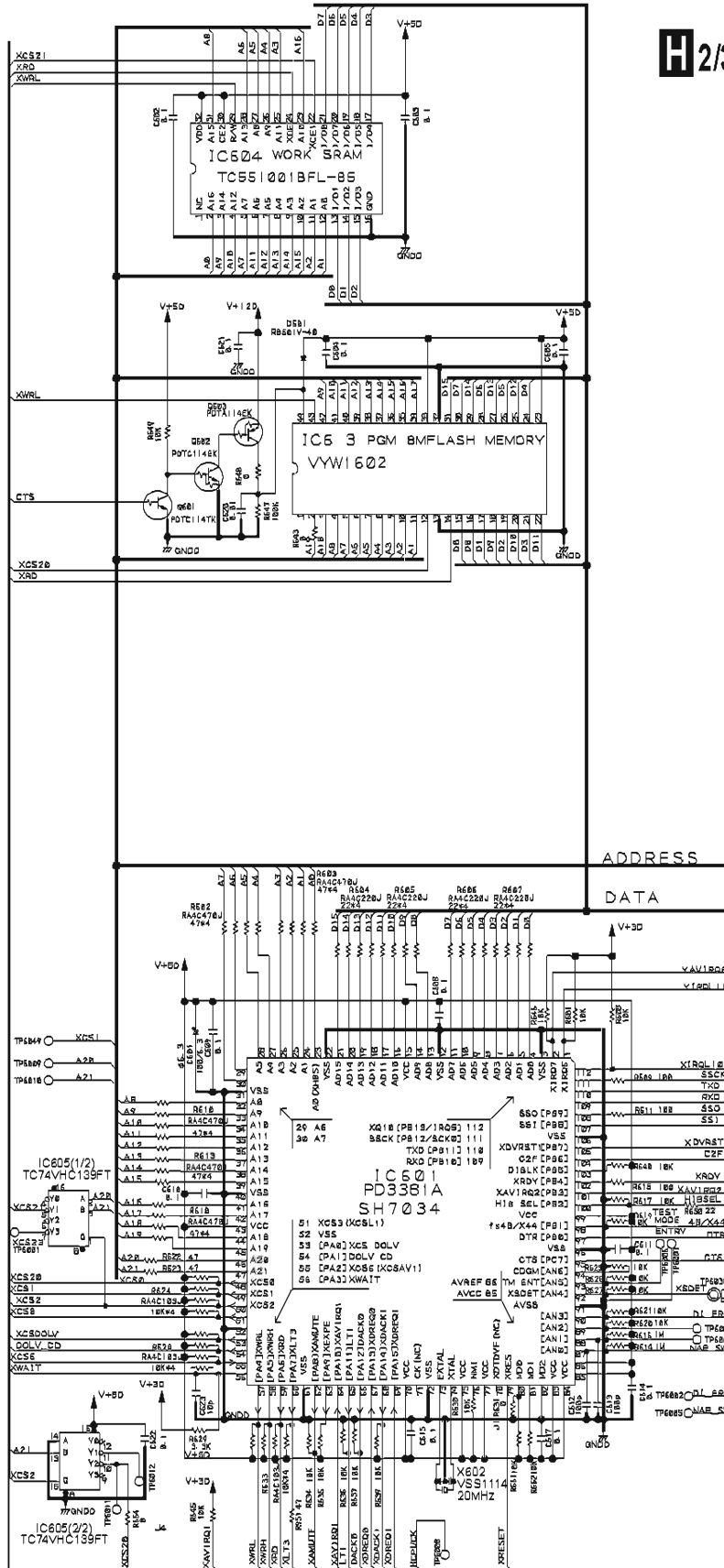
## H 1/3 DVDM ASSY(1/3) (PIVWS1371)



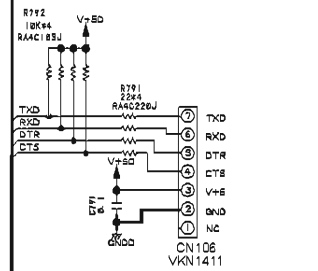


### 3.4 DVDM ASSY(2/3)

### H 2/3 DVDM ASSY(2/3) (PIVWS1371)



- H 1/3 C2F\_XRESET
- H 3/3 XCS0DLV,D0LV-CD,XWRL,XWRH,XRD,XLT3,XAMUTE,XDREQ1,HCPUCX,IR,SEL-IR,XDVRST1,XAVIRQ0,48/X44,HIBSEL,XCS6,XDACK1,NAP SW



MAIN

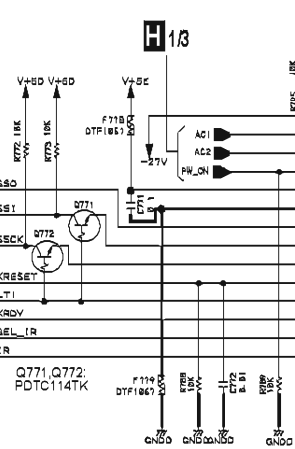
- H 3/3 ADDRESS A2-A10

ADDRESS

- H 3/3 DATA



DATA

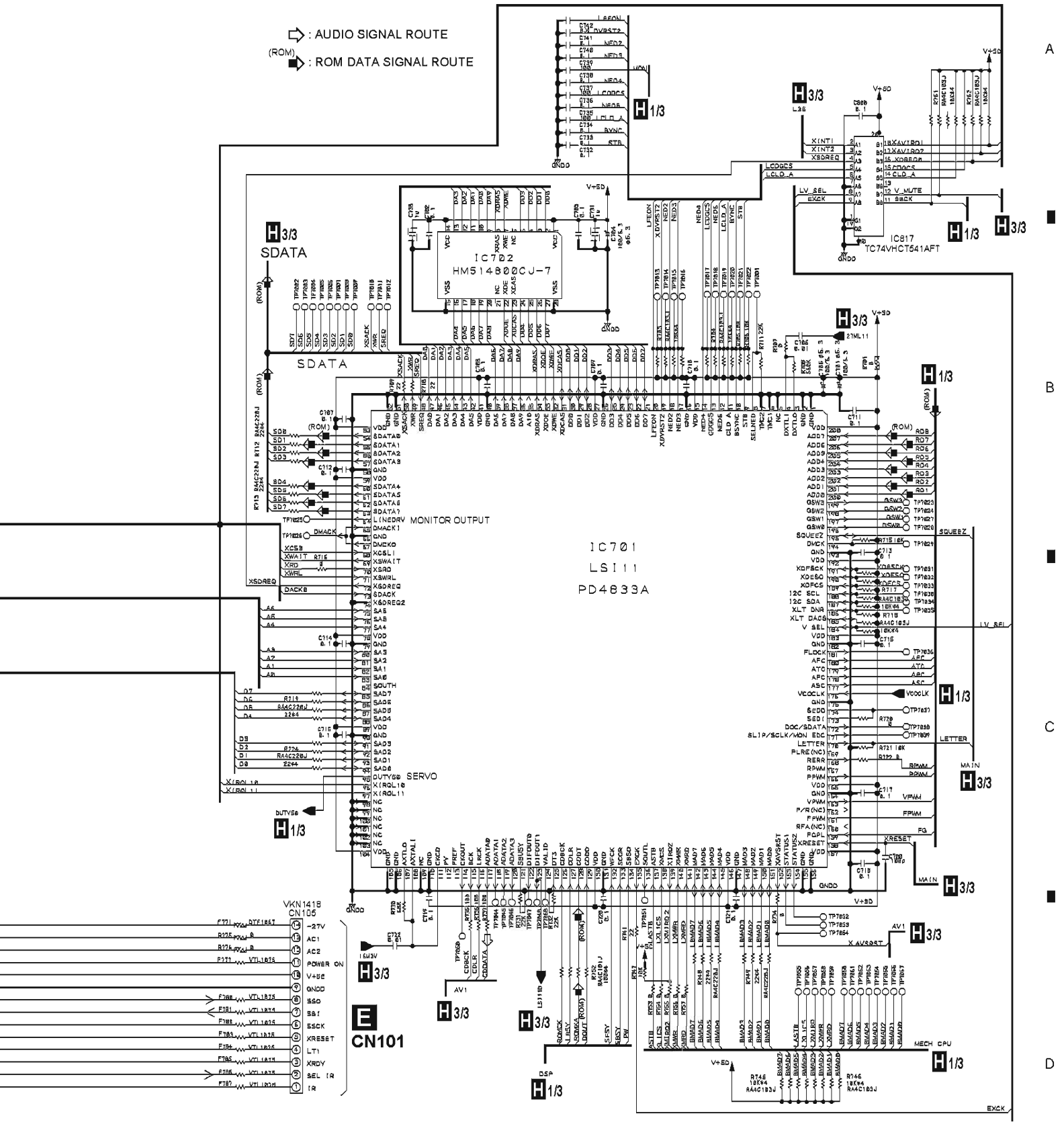
- H 1/3



Q771, Q772, PDC114TK

F719, DTF1067

 : AUDIO SIGNAL ROUTE  
 (ROM) : ROM DATA SIGNAL ROUTE



# 3.5 DVDM ASSY(3/3)

## 3/3 DVDM ASSY(3/3) (PIVWS1371)

A

B

C

D

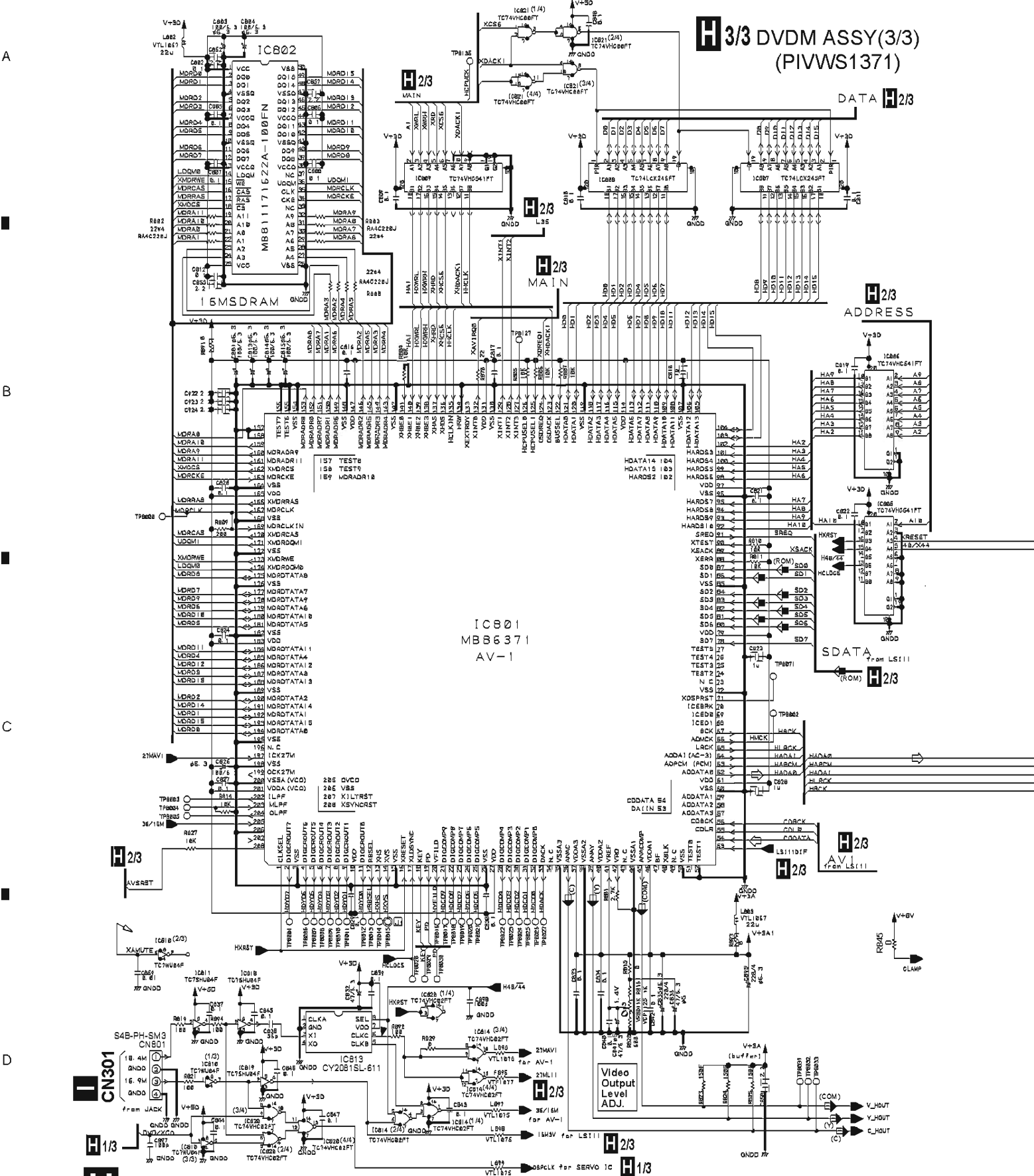
18

1

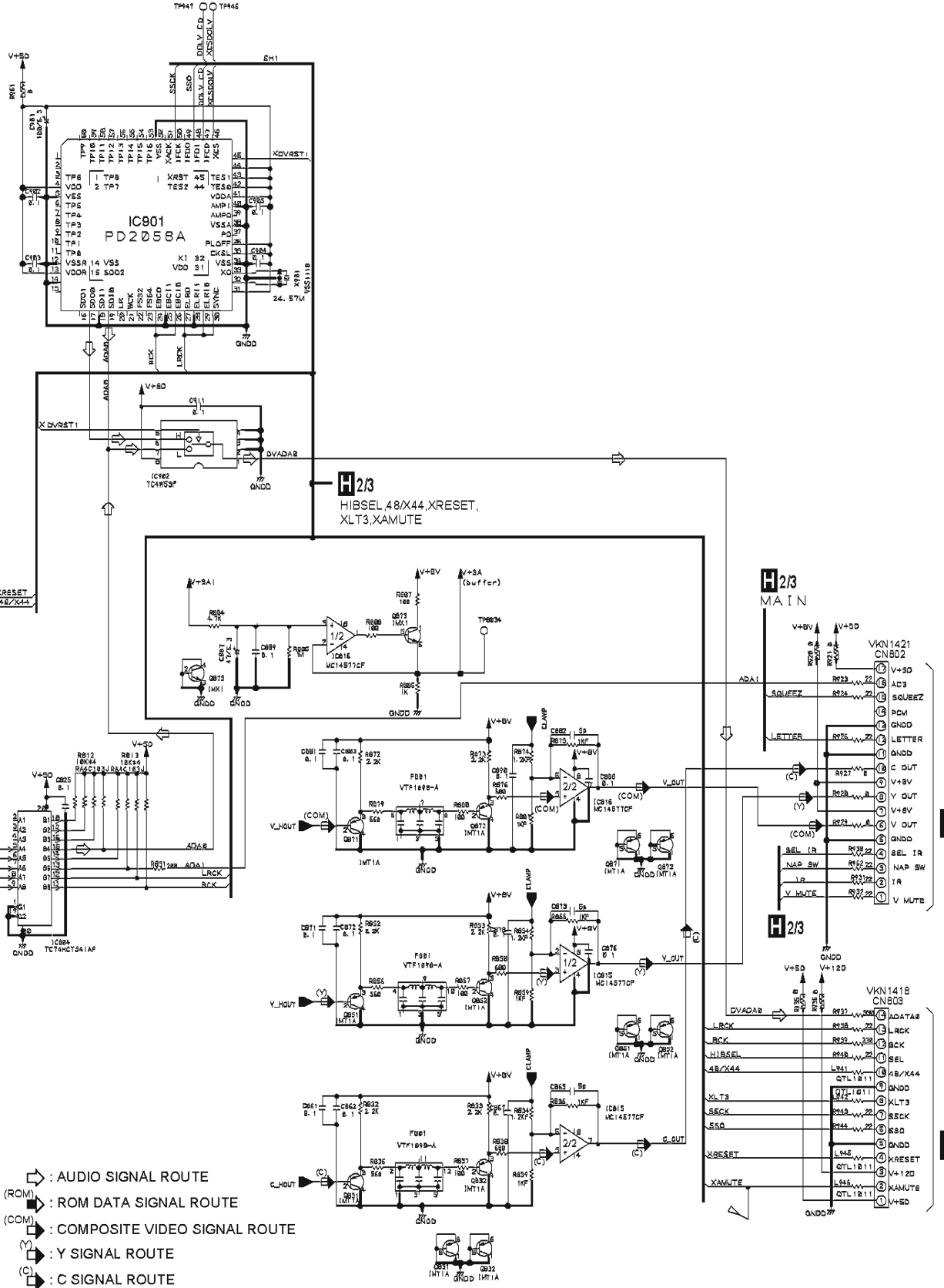
2

3

4



## 3/3



▲ : AUDIO SIGNAL ROUTE  
 (ROM) : ROM DATA SIGNAL ROUTE  
 (COM) : COMPOSITE VIDEO SIGNAL ROUTE  
 (Y) : Y SIGNAL ROUTE  
 (C) : C SIGNAL ROUTE

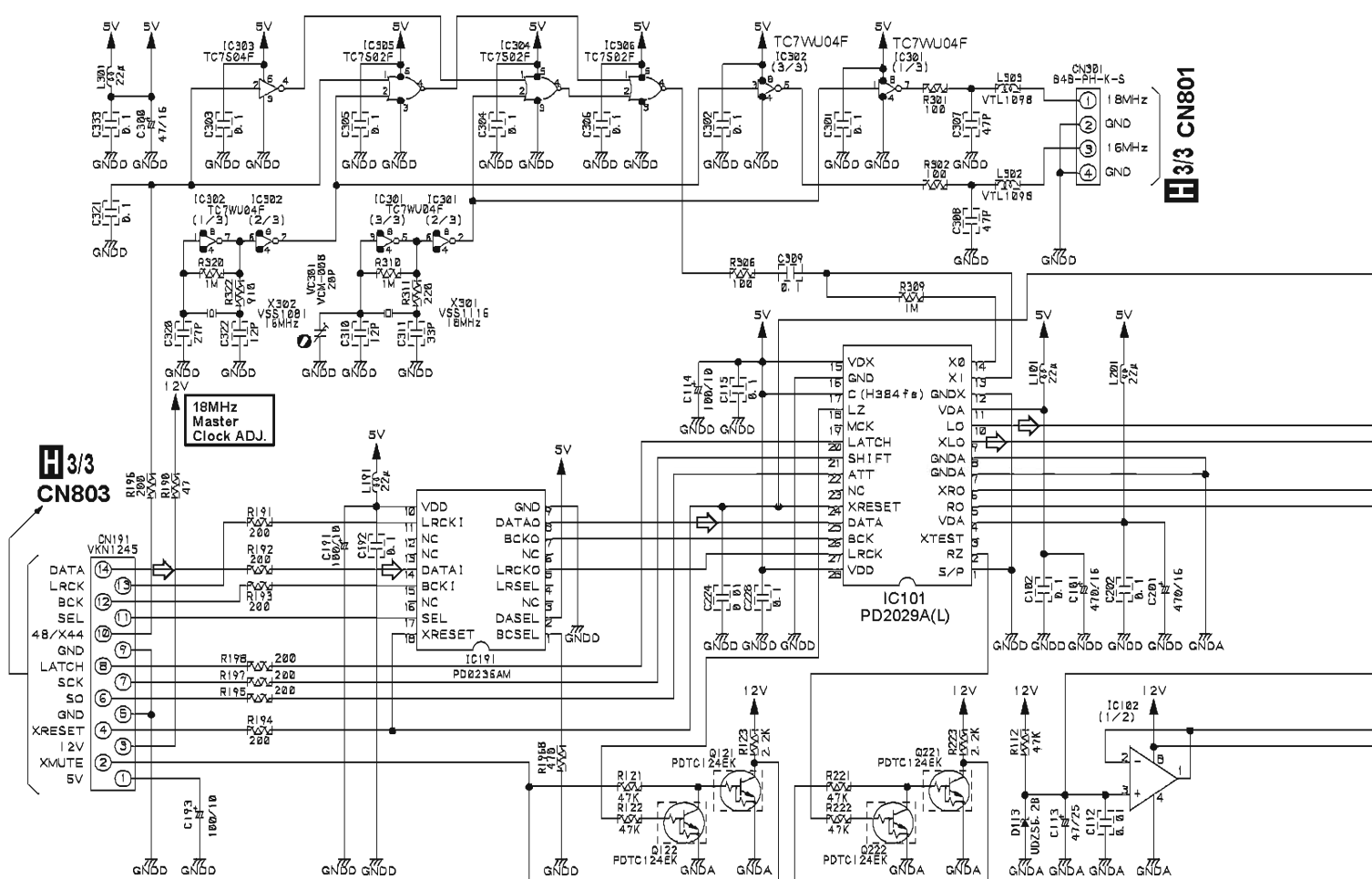
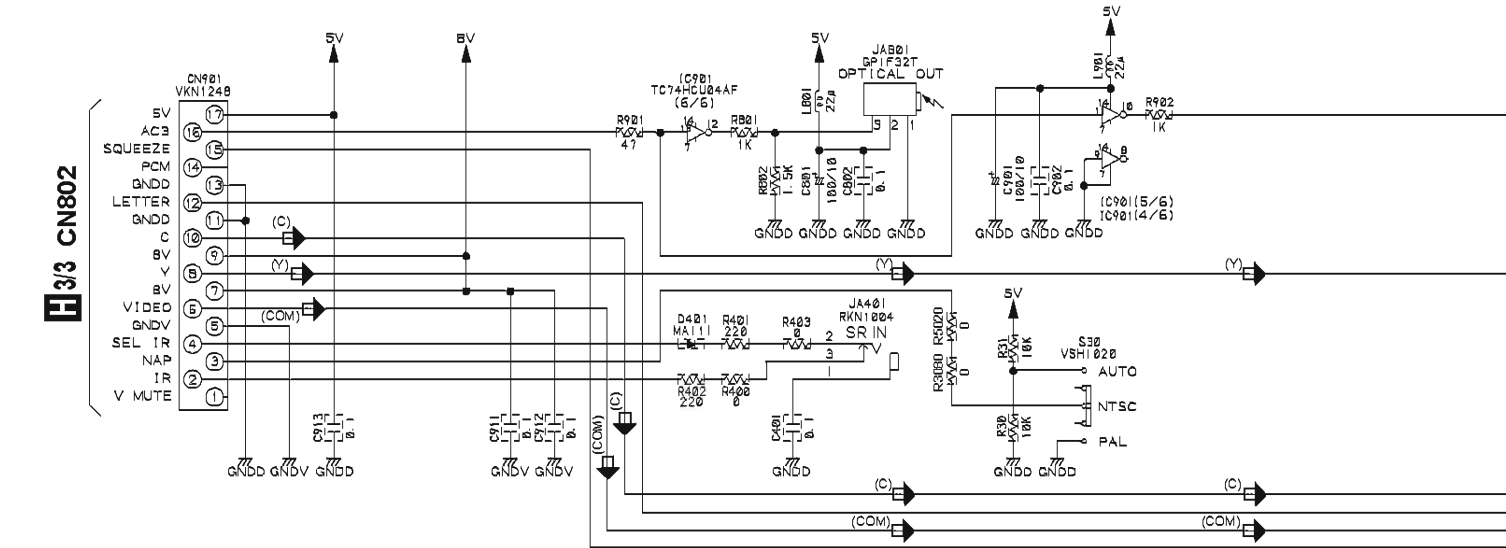
### 3.6 AVJB ASSY

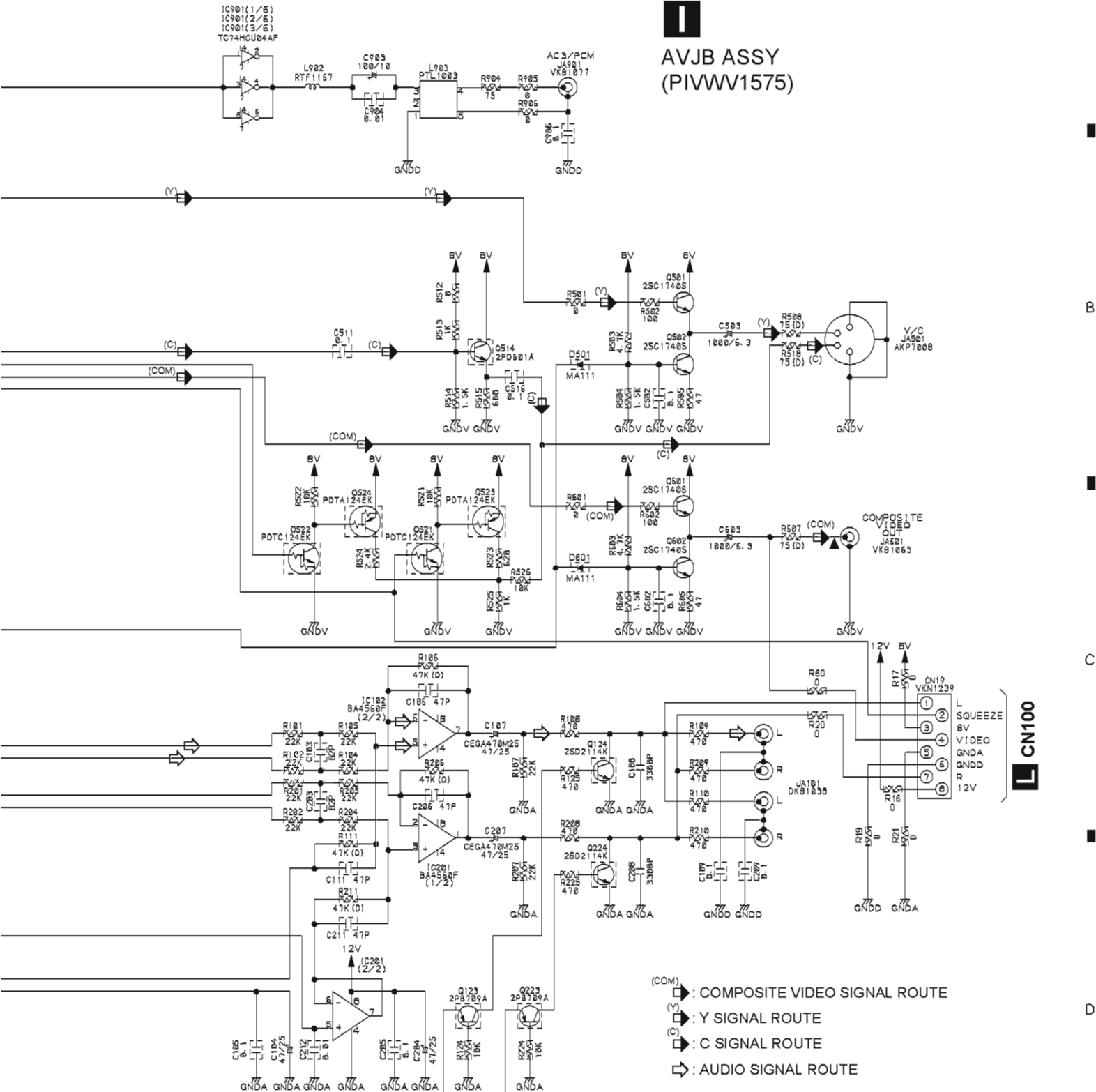
A

B

C

D





**AVJB ASSY**  
**(PIVV1575)**

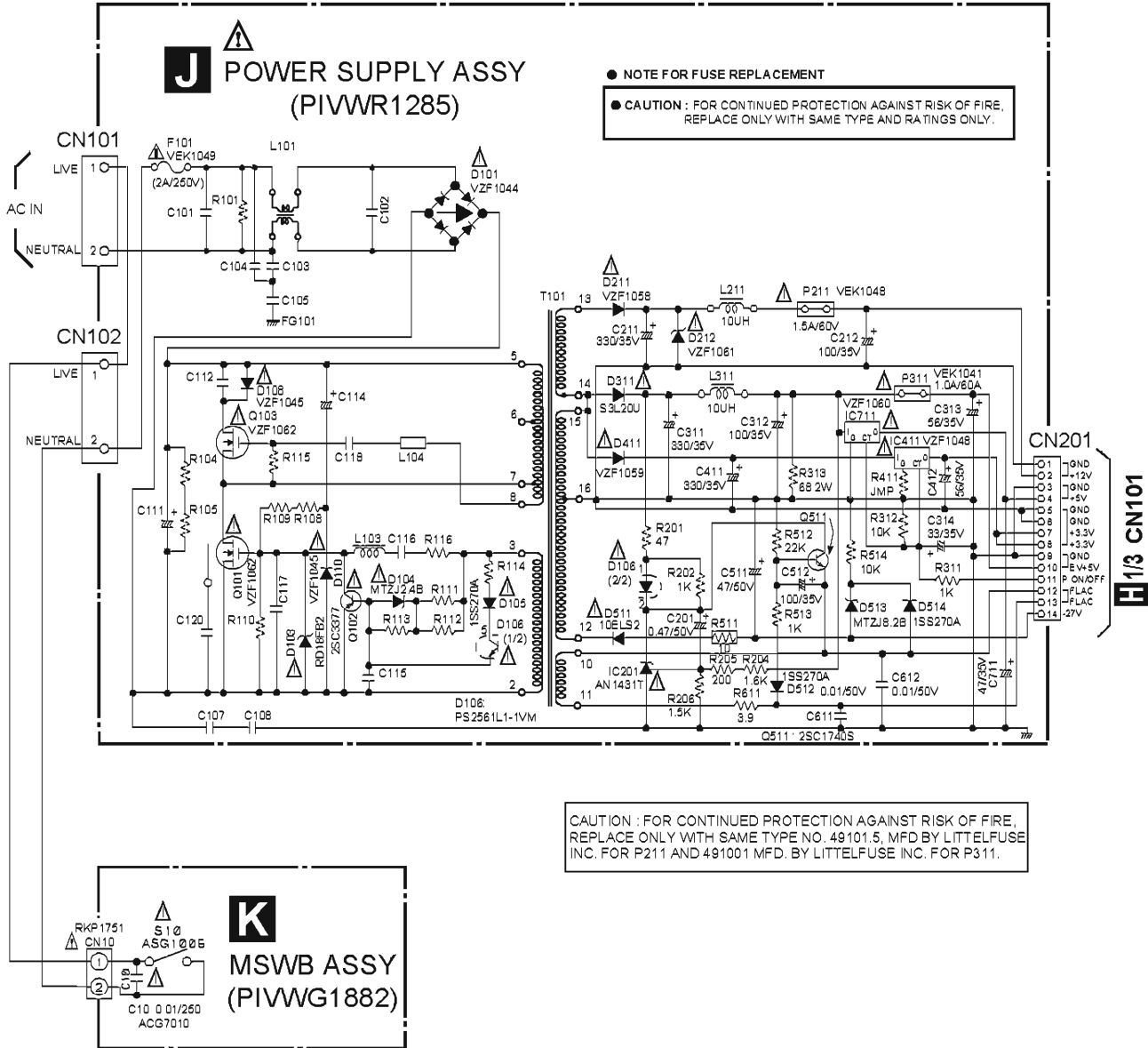
**CN100**



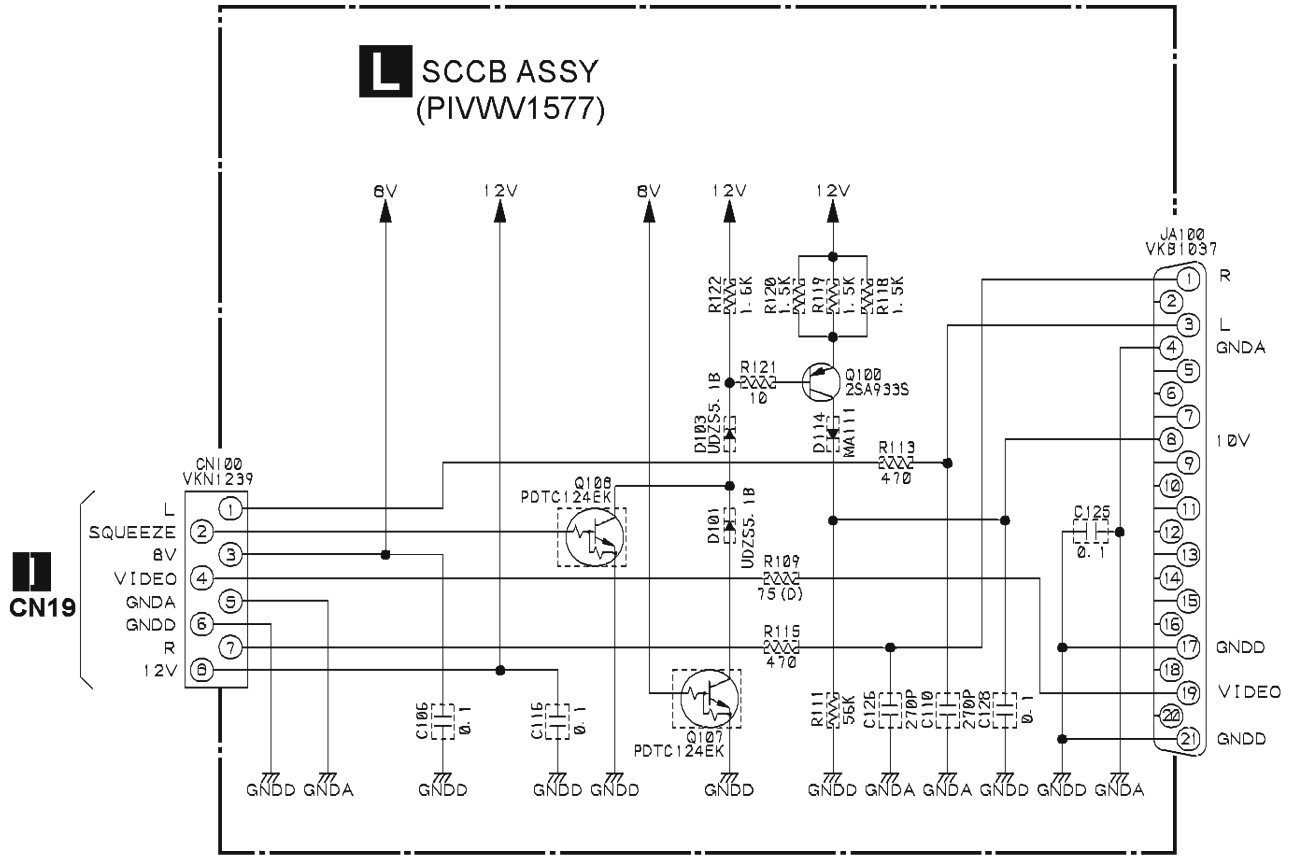
### 3.7 POWER SUPPLY AND MSWB ASSEMBLIES

#### « NOTE OF SPARE PARTS IN POWER SUPPLY ASSY »

- In case of repairing, use the described parts only to prevent an accident.
- Please write the red ✓ mark on the board when the primary section of POWER SUPPLY Assy is repaired.
- Please take care to keep the space, not touching other parts when replacing the parts.



### 3.8 SCCB ASSY



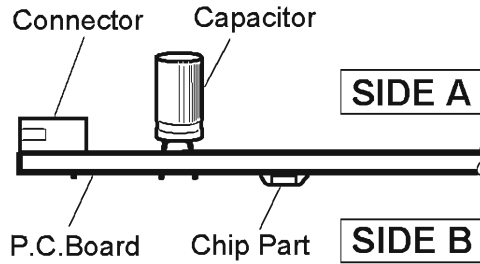
# 4. PCB CONNECTION DIAGRAM

## NOTE FOR PCB DIAGRAMS :

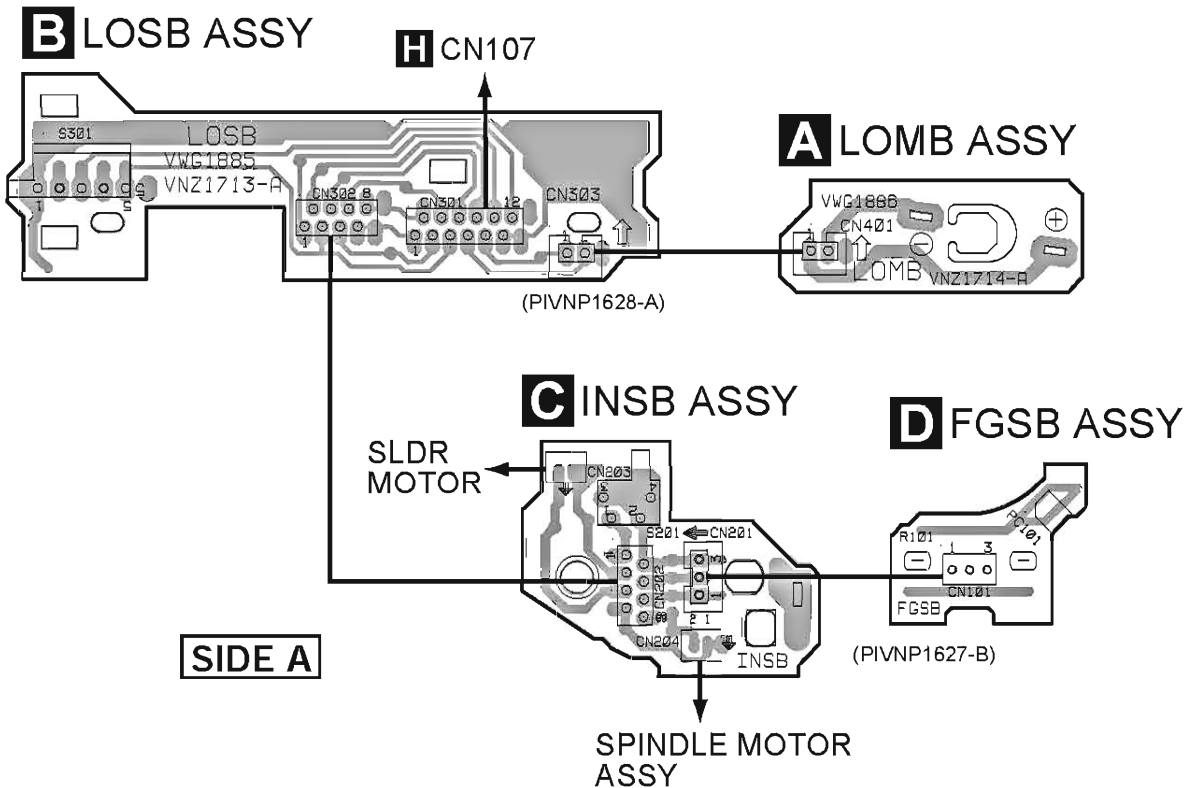
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

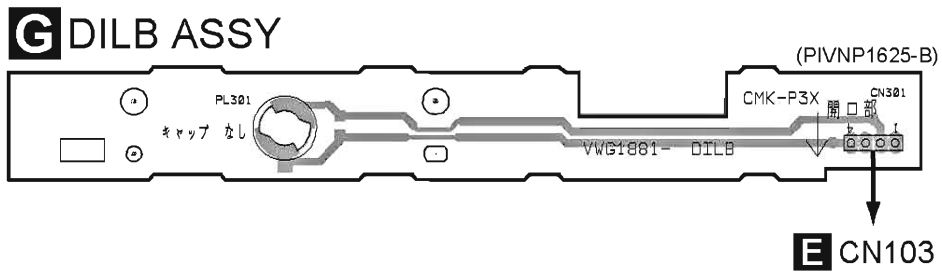
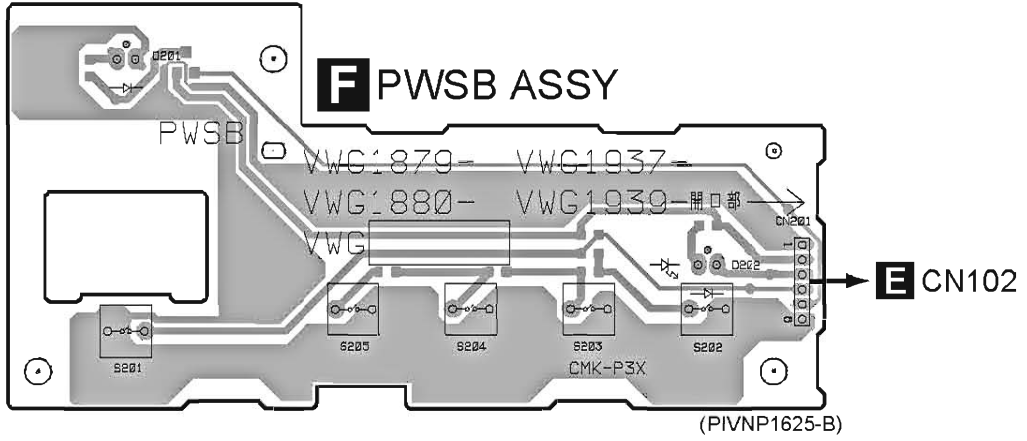
3. The parts mounted on this PCB include all necessary parts for several destinations.
- For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



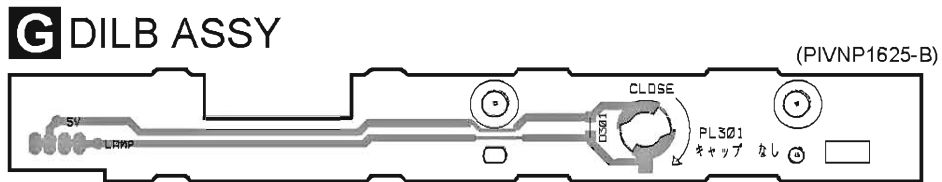
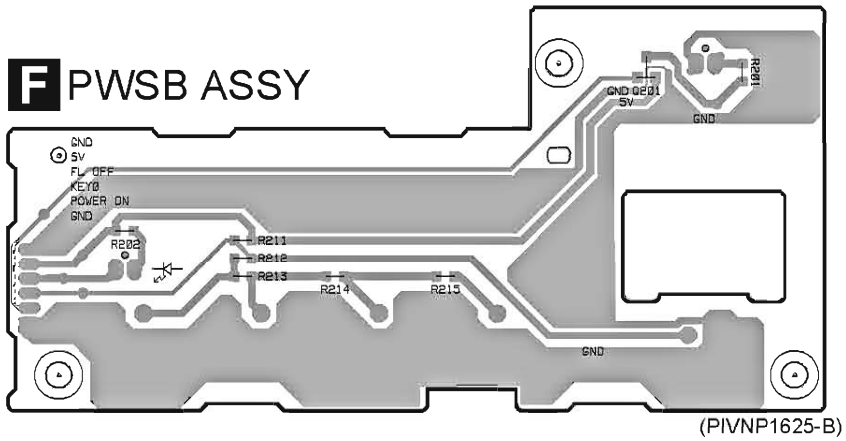
## 4.1 LOMB, LOSB, INSB AND FGSB ASSEMBLIES



### 4.2 PWSB AND DILB ASSEMBLIES



**SIDE A**

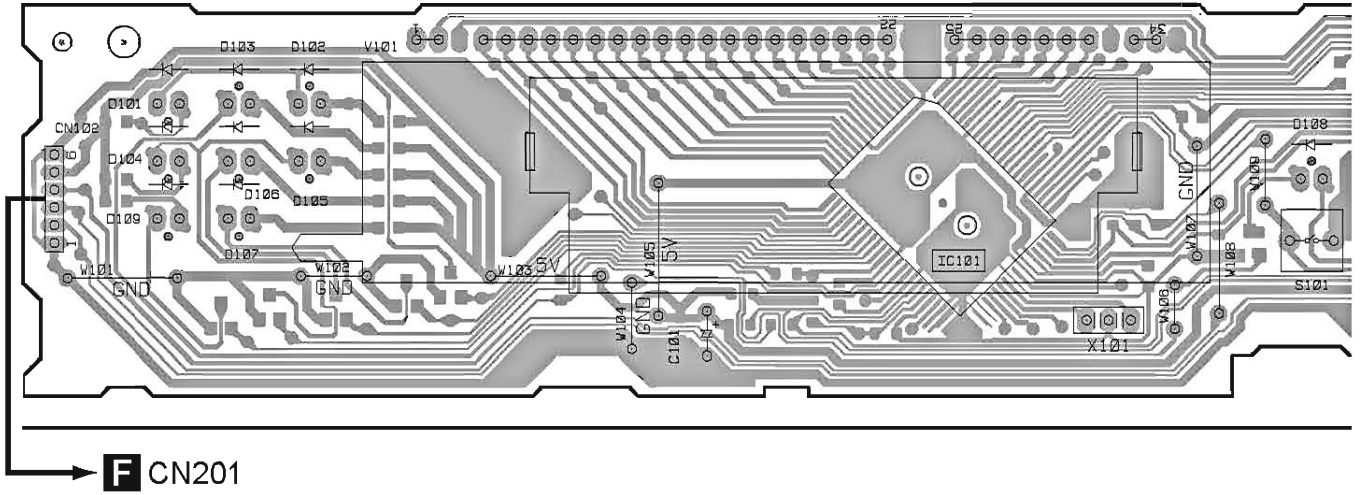


**SIDE B**

### 4.3 FLKB ASSY

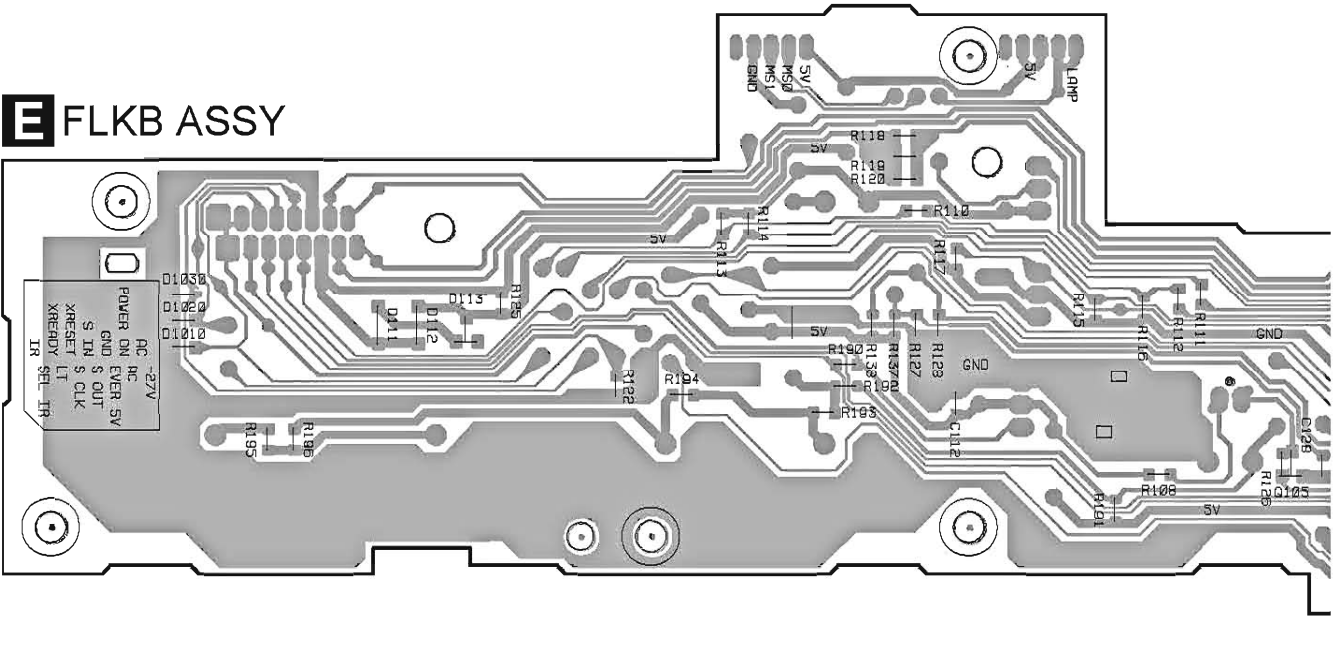
**SIDE A**

#### **E** FLKB ASSY



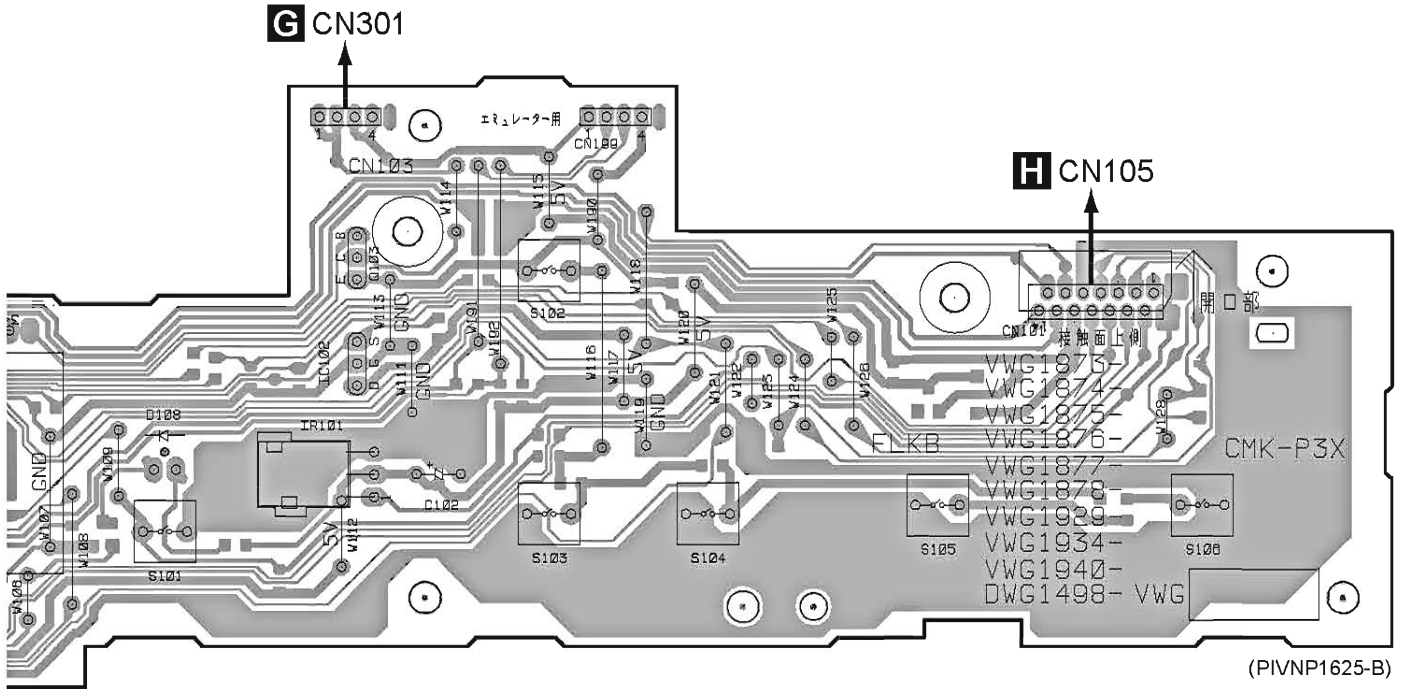
**SIDE B**

#### **E** FLKB ASSY

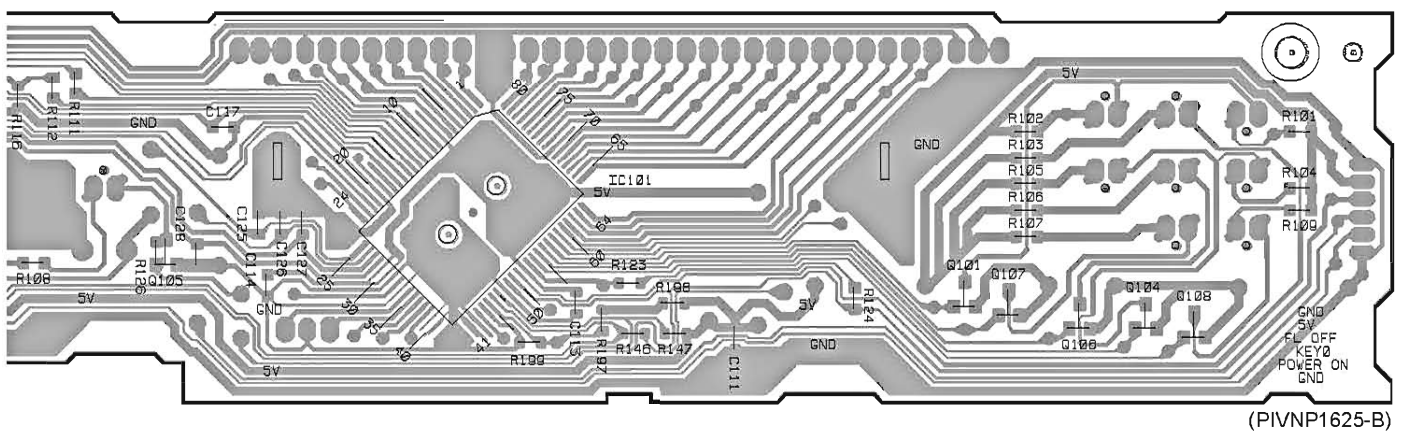


Q105





IC102 Q103



Q105

IC101

Q101 Q107 Q106 Q104 Q108

### 4.4 DVDM ASSY

• This PCB is a four-layered board. Middle layer is mainly connected to Vcc and GND.

A

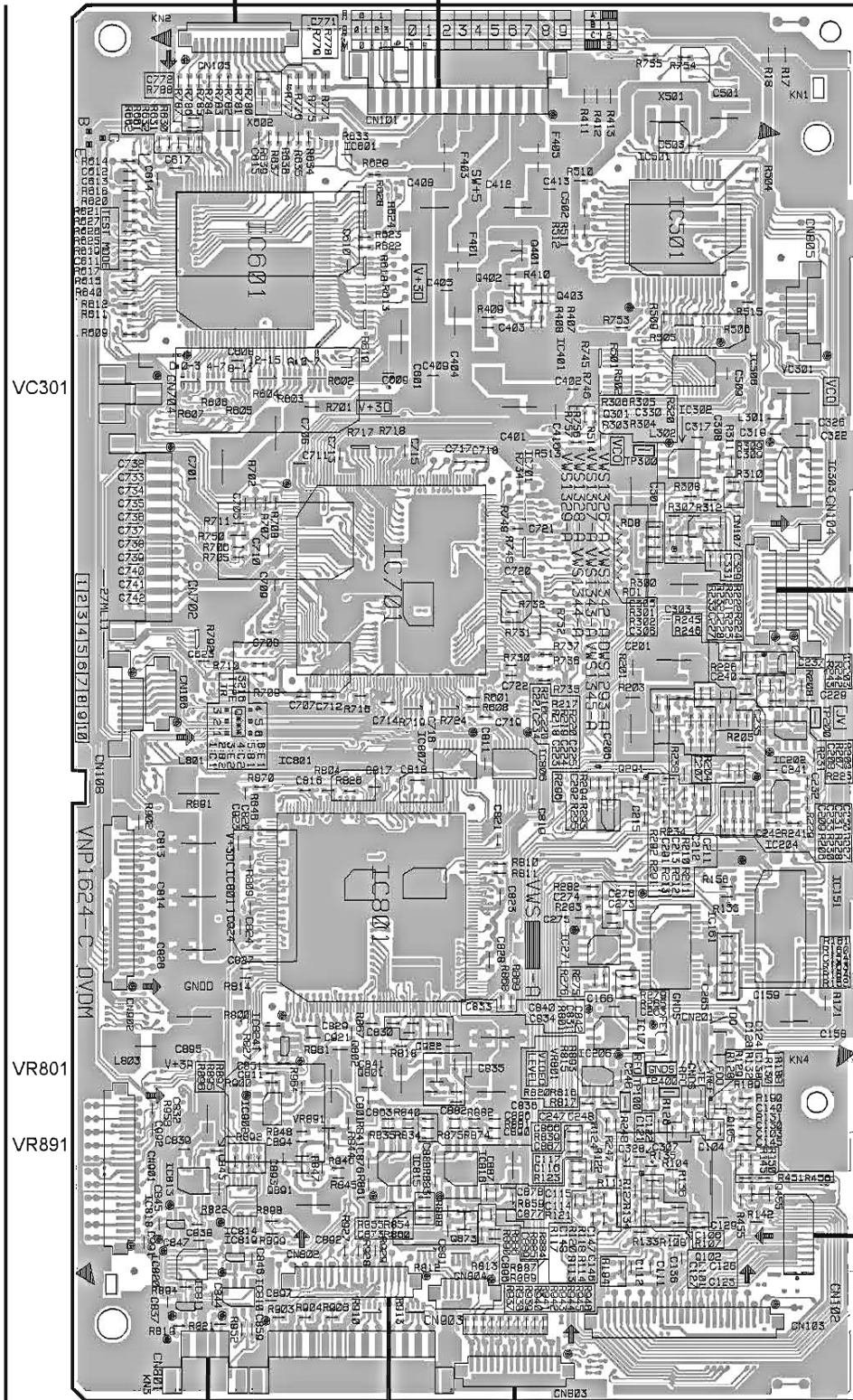
B

C

D

**E** CN101    **J** CN201    **H** DVDM ASSY

- IC601
- IC501
- Q401
- Q403
- IC506
- IC401
- VC301
- IC302
- IC303
- Q301
- IC701
- IC203
- IC202
- IC807
- IC806
- Q291
- IC204
- IC801
- IC151
- IC161
- IC271
- IC171
- IC824
- Q802
- IC206
- VR801
- Q801
- IC902
- Q105
- VR891
- IC815
- IC816
- Q891
- Q455
- IC813
- Q102
- IC814
- Q873
- IC820
- IC810
- IC811



**B** CN301

PICKUP ASSY

**I** CN301

**I** CN901

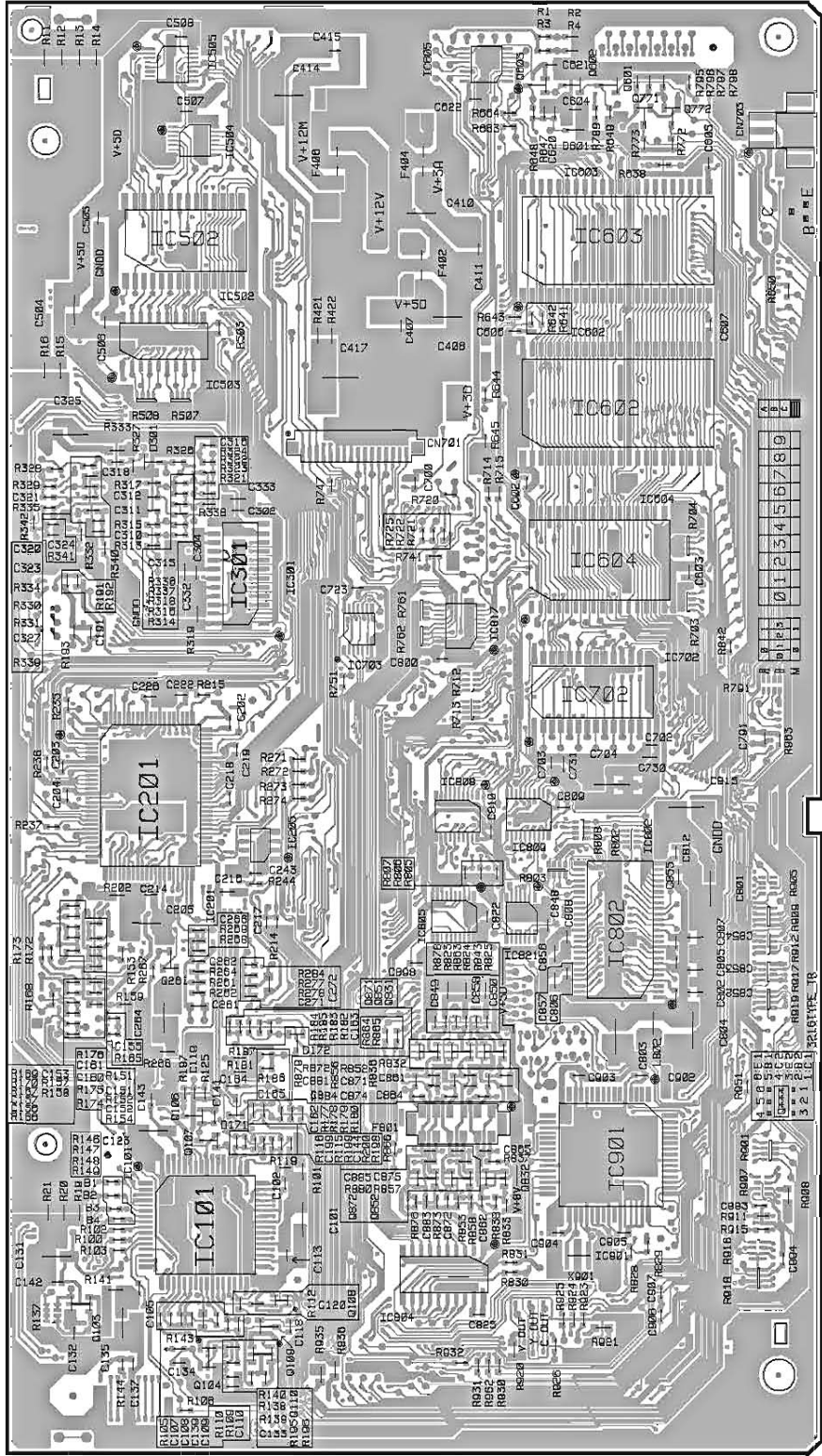
**I** CN191

**SIDE A**

(P1VNP1624-C)



# H DVDM ASSY



- IC505 Q601
- IC605 Q603
- IC504 Q771
- Q772
- IC502 IC603
- IC503
- IC602
- IC301 IC604
- IC703 IC817
- IC702
- IC201 IC808
- IC809
- IC205
- IC805
- IC821
- IC802
- Q261
- Q871
- Q851
- Q831
- Q106
- Q107 IC901
- Q872
- Q852
- Q832
- IC101
- Q103 IC804
- Q108
- Q110
- Q104

(PIVNP1624-C)

**SIDE B**





# 4.5 AVJB ASSY

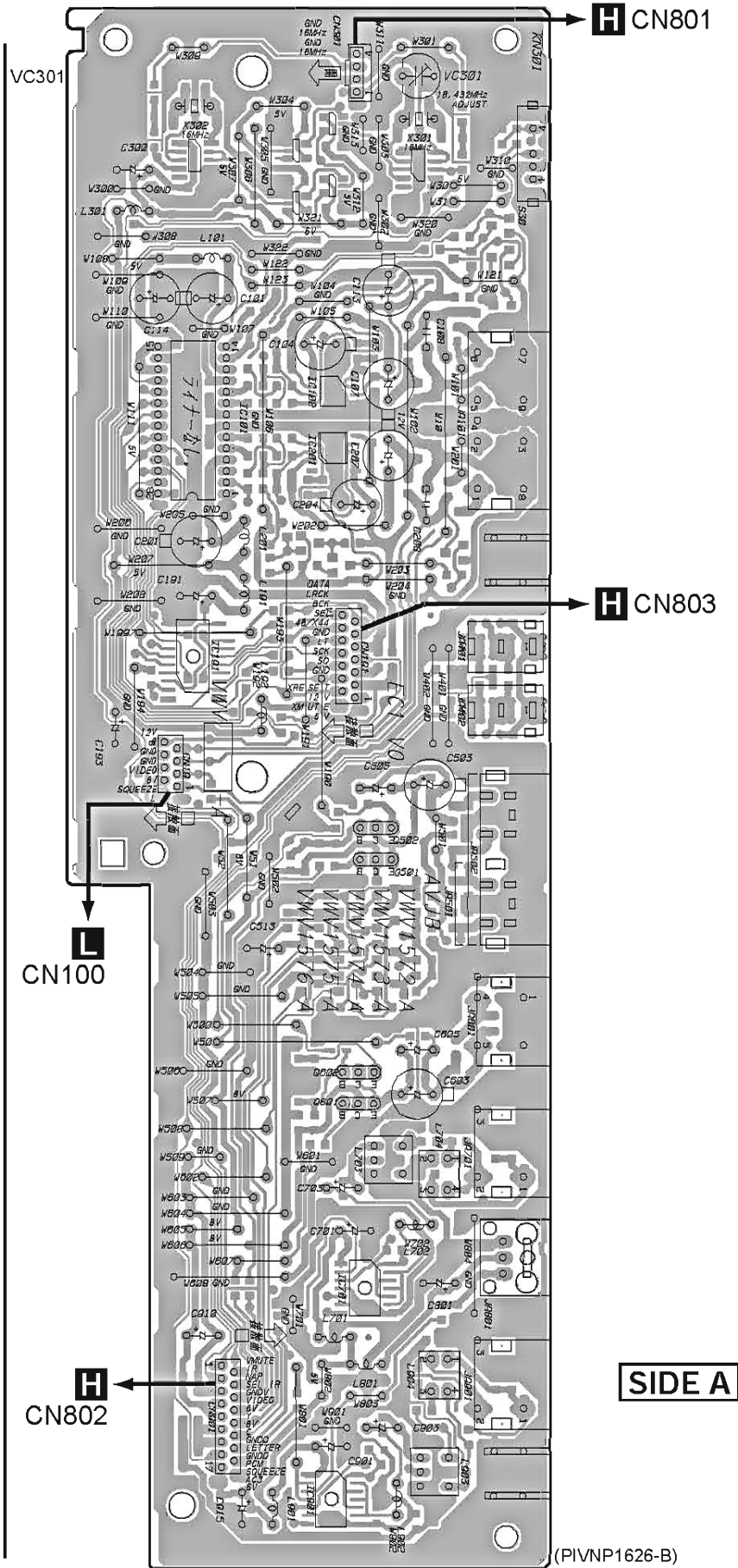
## AVJB ASSY

A

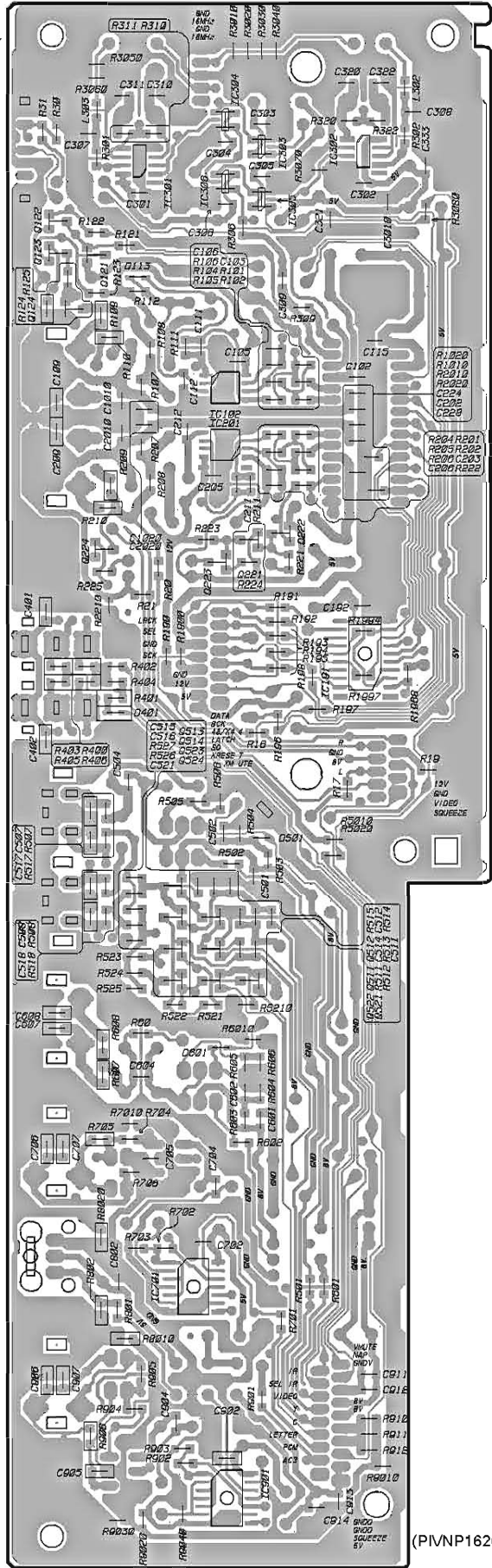
B

C

D



# AVJB ASSY



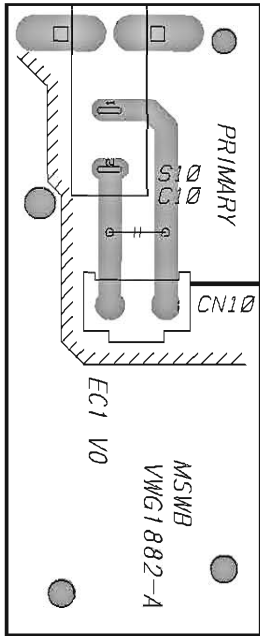
**SIDE B**

- IC301
- IC306
- Q121
- Q124
- IC102
- IC201
- Q221
- Q224
- Q511
- Q514
- Q521
- Q524
- IC701
- IC901

(PINP1626-B)

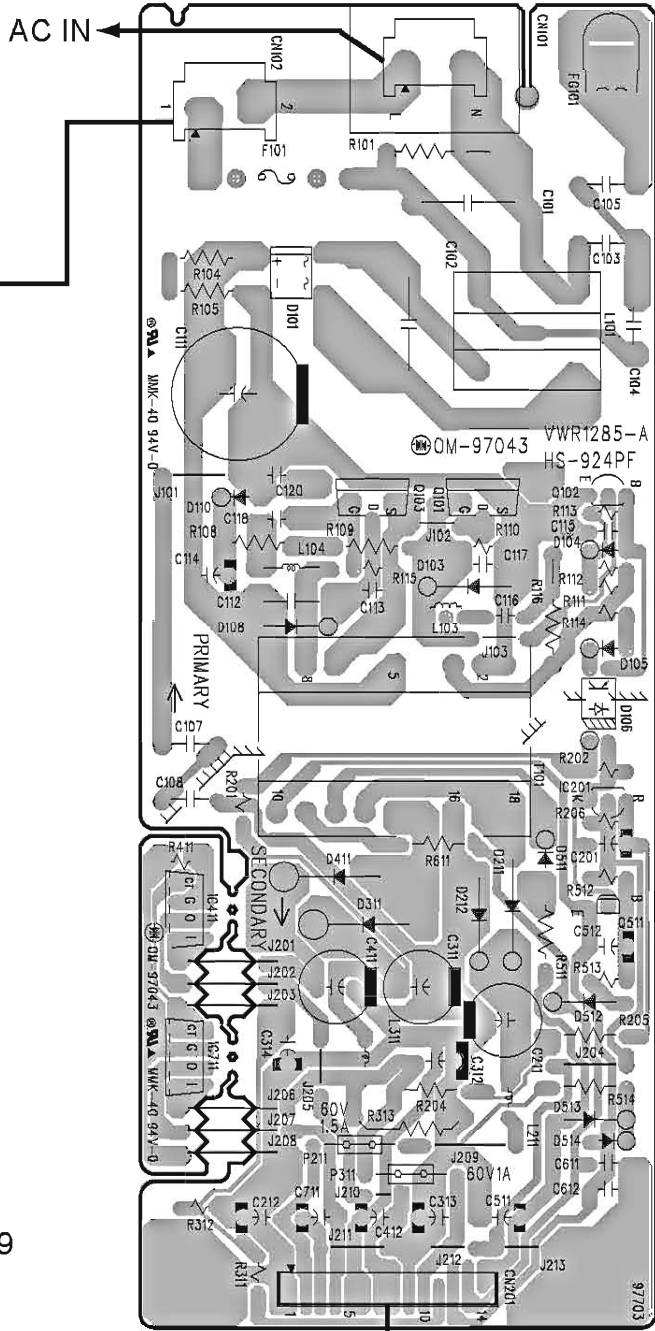
### 4.6 POWER SUPPLY, MSWB AND SCCB ASSEMBLIES

#### **K** MSWB ASSY



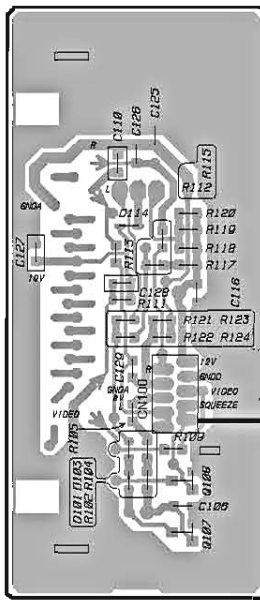
(PIVNP1626-B)

#### **J** POWER SUPPLY ASSY



**H** CN101

#### **L** SCCB ASSY



(PIVNP1629-A)

**SIDE B**

**SIDE A**

- Q101
- Q103
- IC201
- Q511
- IC411
- IC711

- Q108
- Q107

## 5. PCB PARTS LIST

- NOTES: ● Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.
- Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
- |              |               |                  |               |           |         |   |   |   |   |
|--------------|---------------|------------------|---------------|-----------|---------|---|---|---|---|
| 560 $\Omega$ | $\rightarrow$ | $56 \times 10^1$ | $\rightarrow$ | 561 ..... | RD1/4PU | 5 | 6 | 1 | J |
| 47k $\Omega$ | $\rightarrow$ | $47 \times 10^3$ | $\rightarrow$ | 473 ..... | RD1/4PU | 4 | 7 | 3 | J |
| 0.5 $\Omega$ | $\rightarrow$ | R50 .....        |               |           | RN2H    | R | 5 | 0 | K |
| 1 $\Omega$   | $\rightarrow$ | 1R0 .....        |               |           | RS1P    | 1 | R | 0 | K |
- Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
- |                |               |                   |               |            |         |   |   |   |   |   |
|----------------|---------------|-------------------|---------------|------------|---------|---|---|---|---|---|
| 5.62k $\Omega$ | $\rightarrow$ | $562 \times 10^1$ | $\rightarrow$ | 5621 ..... | RN1/4PC | 5 | 6 | 2 | 1 | F |
|----------------|---------------|-------------------|---------------|------------|---------|---|---|---|---|---|

### 5.1 LIST OF WHOLE PCB ASSEMBLIES

Mark	Symbol and Description	Part No.		Remarks
		DV-P2E		
NSP	LOAB ASSY	PIVWM1798		
NSP	└ LOMB ASSY	PIVWG1886		
NSP	└ LOSB ASSY	PIVWG1885		
NSP	SMEB ASSY	PIVWM1797		
NSP	└ INSB ASSY	PIVWG1883		
NSP	└ FGSB ASSY	PIVWG1884		
NSP	FLKY ASSY	PIVWM1792		
NSP	└ FLKB ASSY	PIVWG1876		
NSP	└ PWSB ASSY	PIVWG1937		
NSP	└ DILB ASSY	PIVWG1881		
NSP	JKSB ASSY	PIVWM1796		
	└ AVJB ASSY	PIVWV1575		
	└ MSWB ASSY	PIVWG1882		
$\Delta$	DVDM ASSY	PIVWS1371		
	POWER SUPPLY ASSY	PIVWR1285		
	SCCB ASSY	PIVWV1577		

## 5.2 PARTS LIST FOR DV-P2E

Mark	No.	Description	Part No.
<b>LOAB ASSY</b>			
<b>OTHERS</b>			
		PC BOARD LOAB	PIVNP1628

Mark	No.	Description	Part No.
<b>A LOMB ASSY</b>			
<b>OTHERS</b>			
		CN401 KR CONNECTOR	PIB2B-PH-K-S

Mark	No.	Description	Part No.
<b>B LOSB ASSY</b>			
<b>SWITCH</b>			
	S301		PIVSK1011
<b>OTHERS</b>			
	CN303	KR CONNECTOR	PIB2B-PH-K-S
	CN302	8P FFC CONNECTOR	PIVKN1268
	CN301	12P FFC CONNECTOR	PIVKN1272

Mark	No.	Description	Part No.
<b>SMEB ASSY</b>			
<b>OTHERS</b>			
		PC BOARD SMEB	PIVNP1627

Mark	No.	Description	Part No.
<b>C INSB ASSY</b>			
<b>SWITCH</b>			
	S201		PIDSG1017
<b>OTHERS</b>			
	CN201	KR CONNECTOR 3P PCB BINDER	PIB3B-PH-K-S PIDEF1012
	CN202	8P FFC CONNECTOR	PIVKN1239

Mark	No.	Description	Part No.
<b>D FGSB ASSY</b>			
<b>SEMICONDUCTOR</b>			
	PC101		PIGP2S27(B)

Mark	No.	Description	Part No.
<b>RESISTORS</b>			
		All Resistors	PIRS1/10S□□□J

Mark	No.	Description	Part No.
<b>OTHERS</b>			
	CN101	KR CONNECTOR 3P	PIB3B-PH-K-S

Mark	No.	Description	Part No.
<b>E FLKB ASSY</b>			
<b>SEMICONDUCTORS</b>			
	IC101		PIPD4890A
	IC102		PIS-806D
	Q103		PIDTD113ES
	D112		PIEP05Q04

Mark	No.	Description	Part No.
<b>SWITCHES</b>			
	S102-S106		PIRSG1030

Mark	No.	Description	Part No.
<b>CAPACITORS</b>			
	C101,C102		PICEJA470M6R3
	C117,C125-C128		PICKSQYB102K50
	C111-C114		PICKSQYF104Z25

Mark	No.	Description	Part No.
<b>RESISTORS</b>			
		All Resistors	PIRS1/10S□□□J

Mark	No.	Description	Part No.
<b>OTHERS</b>			
	CN103	FJ CONNECTOR 4P	PI04P-FJ
	CN102	FJ CONNECTOR 6P	PI06P-FJ
		REMOTE RECEIVER UNIT	PIGP1U28X
	V101	FL TUBE SPACER	PIVAW1046 PIVEC1599
	CN101	14P FFC CONNECTOR FL HOLDER	PIVKN1274 PIVNF1087
	X101	CERAMIC RESONATOR (5MHz)	PIVSS1104

Mark	No.	Description	Part No.
<b>F</b>		<b>PWSB ASSY</b>	
		<b>SEMICONDUCTORS</b>	
	Q201		PIPDTA124EK
	D202		PISLP4118C51H
	D201		PISLP9118C51H
		<b>SWITCH</b>	
	S202		PIRSG1030
		<b>RESISTORS</b>	
	All Resistors		PIRS1/10S□□□J
		<b>OTHERS</b>	
	CN201	FJ CONNECTOR 6P	PI06R-FJ

Mark	No.	Description	Part No.
<b>G</b>		<b>DILB ASSY</b>	
		<b>SEMICONDUCTOR</b>	
	D301		PIMA111
		<b>OTHERS</b>	
	CN301	FJ CONNECTOR 4P	PI04R-FJ
	PL301	LAMP (DVD ILUM.)	PIVEL1022

Mark	No.	Description	Part No.
<b>H</b>		<b>DVDM ASSY</b>	
		<b>SEMICONDUCTORS</b>	
	IC171		PIBA10393F
	IC161		PIBA6195FP
	IC151		PIBA6797FP
	IC813		PICY2081SL-611
	IC702		PIHM514800CJ-7
	IC101		PILA9700M
	IC201		PILC78650NE
	IC802		PIMB811171622A-100FN
	IC801		PIMB86371
	IC815,IC816		PIMC14577CF
	IC271,IC302		PINJM2100M
	IC203		PINJM2107F
	IC901		PIPD2058A
	IC601		PIPD3381A
	IC701		PIPD4833A
	IC501		PIPD4889A
	IC502		PISRM2B256SLMX70
△	IC401		PITA78M08F
	IC202,IC204,IC206,IC902		PITC4W53F
	IC604		PITC551001BFL-85
	IC503		PITC74HC573AF
	IC804		PITC74HCT541AF
	IC303		PITC74HCU04AF
	IC807,IC808		PITC74LCX245FT
	IC821		PITC74VHC00FT
	IC814,IC820		PITC74VHC02FT
	IC505,IC605		PITC74VHC139FT
	IC504		PITC74VHC20FT
	IC805,IC806,IC809		PITC74VHC541FT
	IC506		PITC74VHCT245AFT

Mark	No.	Description	Part No.
	IC817		PITC74VHCT541AFT
	IC811,IC818,IC819		PITC7SHU04F
	IC810		PITC7WU04F
	IC301		PITLC5540INS
	IC603		PIVYW1602
△	Q401		PI2SB1260
	Q108		PIHN1K03FU
	Q455,Q831,Q832,Q851,Q852		PIIMT1A
	Q871,Q872		PIIMT1A
	Q103,Q402,Q873		PIIMX1
	Q102,Q104,Q291,Q301		PIIMZ1A
	Q106,Q603		PIPDTA114EK
	Q107,Q109,Q261,Q602		PIPDTC114EK
	Q601,Q771,Q772		PIPDTC114TK
	D301		PIKV1410
	D171,D172		PIMA152WK
	D601		PIRB501V-40

Mark	No.	Description	Part No.
		<b>COILS AND FILTERS</b>	
	F771,F778,F779	CHIP BEAD	PIDTF1067
	L941,L942,L945,L946	CHIP SOLID INDUCTOR	PIQTL1011
	F896	FERRITE BEAD	PIVTF1077
	F801	VIDEO FILTER	PIVTF1098
	F401-F406	CHIP EMI FILTER	PIVTH1037
	L301	CHIP COIL (1.5mH)	PIVTL1059
	L101,L302	CHIP COIL (10mH)	PIVTL1061
	L802,L803	CHIP COIL	PIVTL1067
	L335,L340,L342	CHIP BEAD	PIVTL1074
	L777,L780-L787,L895	CHIP BEAD	PIVTL1075
	L897-L899	CHIP BEAD	PIVTL1075

Mark	No.	Description	Part No.
		<b>CAPACITORS</b>	
	C623		PICCSRCH100D50
	C152,C208,C291,C612,C613		PICCSRCH101J50
	C700,C735,C737,C739		PICCSRCH101J50
	C897,C898		PICCSRCH101J50
	C111,C139,C215,C231,C232		PICCSRCH151J50
	C248		PICCSRCH151J50
	C125,C148,C329		PICCSRCH180J50
	C112,C118		PICCSRCH220J50
	C121,C130,C199,C319,C324		PICCSRCH330J50
	C120		PICCSRCH331J50
	C310,C323,C327		PICCSRCH470J50
	C230		PICCSRCH471J50
	C126,C331,C838		PICCSRCH560J50
	C127,C330,C863,C873,C882		PICCSRCH5R0C50
	C160		PICCSRCH680J50
	C401		PICEV101M10
	C101,C104,C201,C325,C601		PICEV101M6R3
	C701,C704,C706,C801		PICEV101M6R3
	C803,C804,C813-C815,C826		PICEV101M6R3
	C901		PICEV101M6R3
	C123,C158,C264,C412,C414		PICEV220M16
	C835,C895		PICEV221M4
	C131,C135,C205,C206,C301		PICEV470M6R3
	C303,C404,C406,C408,C410		PICEV470M6R3
	C501,C504,C832,C836,C841		PICEV470M6R3

Mark	No.	Description	Part No.
	C887		PICEV470M6R3
	C211		PICKSQYB104K25
	C109,C124,C216,C220,C229		PICKSQYB105K10
	C234,C261,C275,C308,C326		PICKSQYB105K10
	C332,C333,C730,C731		PICKSQYB105K10
	C818,C823,C828		PICKSQYF105Z16
	C213,C292,C309,C321		PICKSRYB102K50
	C105,C106,C108,C146,C147		PICKSRYB103K50
	C151,C154-C157,C161,C207		PICKSRYB103K50
	C217,C221,C247,C263,C265		PICKSRYB103K50
	C276,C318,C320,C620,C705		PICKSRYB103K50
	C722,C772,C859		PICKSRYB103K50
	C143,C162-C165,C223,C224		PICKSRYB104K16
	C242,C273,C274,C311,C312		PICKSRYB104K16
	C315		PICKSRYB104K16
	C141		PICKSRYB222K50
	C328		PICKSRYB223K25
	C262,C271		PICKSRYB472K50
	C122		PICKSRYB473K16
	C102,C103,C113,C129		PICKSRYF104Z16
	C132-C134,C136,C137,C159		PICKSRYF104Z16
	C166,C191,C202-C204,C209		PICKSRYF104Z16
	C214,C218,C219,C222		PICKSRYF104Z16
	C226-C228,C235,C237,C241		PICKSRYF104Z16
	C246,C302,C304,C305,C317		PICKSRYF104Z16
	C322,C402,C403,C405,C407		PICKSRYF104Z16
	C409,C411,C413,C415		PICKSRYF104Z16
	C502,C503,C505-C509		PICKSRYF104Z16
	C602-C605,C608-C611		PICKSRYF104Z16
	C614,C615,C617,C621,C622		PICKSRYF104Z16
	C702,C703,C707-C721		PICKSRYF104Z16
	C732-C734,C736,C738		PICKSRYF104Z16
	C740-C742,C771,C791,C800		PICKSRYF104Z16
	C802,C805-C812,C816,C817		PICKSRYF104Z16
	C819-C822,C824,C825,C827		PICKSRYF104Z16
	C829,C830,C833,C834,C837		PICKSRYF104Z16
	C839,C840,C842-C848		PICKSRYF104Z16
	C861,C862,C867,C871,C872		PICKSRYF104Z16
	C876,C878,C881,C883		PICKSRYF104Z16
	C888-C890,C902-C905,C911		PICKSRYF104Z16
	C852,C855,C857 (2.2μF/6.3V)		PIVCG1030
	C858,C922-C924 (2.2μF/6.3V)		PIVCG1030
	VC301 (40pF)		PIVCM1010

## RESISTORS

R752	PIRA4C101J
R507,R508,R624,R628,R633	PIRA4C103J
R703,R704,R717,R718	PIRA4C103J
R745,R746,R761,R762,R792	PIRA4C103J
R812,R813	PIRA4C103J
R137,R501,R502,R505,R506	PIRA4C220J
R604-R607,R712,R713,R719	PIRA4C220J
R724,R748,R749,R791	PIRA4C220J
R802,R803,R808	PIRA4C220J
R602,R603,R610,R613,R618	PIRA4C470J
R101,R11-R14,R141	PIRS1/10S0R0J
R15-R17,R171,R18	PIRS1/10S0R0J
R201-R203,R266,R300,R319	PIRS1/10S0R0J
R333,R411-R413,R701	PIRS1/10S0R0J
R775,R776,R891,R893	PIRS1/10S0R0J

Mark	No.	Description	Part No.
	R920,R921,R935,R936,R961		PIRS1/10S0R0J
	R205		PIRS1/10S101J
	R835,R839,R855,R859,R875		PIRS1/16S1001F
	R881		PIRS1/16S1001F
	R834,R854,R874		PIRS1/16S1201F
	R823-R825		PIRS1/16S1500F
	R117,R118		PIRS1/16S1501F
	R126		PIRS1/16S1502F
	R241,R247		PIRS1/16S2202F
	R110,R153,R155,R173,R174		PIRS1/16S2702F
	R213,R228,R229,R248		PIRS1/16S2702F
	R152,R156,R158-R164		PIRS1/16S4702F
	R167-R170,R172,R175,R194		PIRS1/16S4702F
	R227		PIRS1/16S4702F
	VR801 (1kΩ)		PIVCP1125
	Other Resistors		PIRS1/16S□□□□

## OTHERS

CN101	PH CONNECTOR	PIS14B-PH-SM3
CN801	PH CONNECTOR	PIS4B-PH-SM3
TP100,TP200,TP300,TP400	CHECKER CHIP	PIVKF1001
CN201	B TO B CONNECTOR 14P	PIVKN1324
CN106	7P FFC CONNECTOR	PIVKN1411
CN107	12P FFC CONNECTOR	PIVKN1416
CN105,CN803	14P FFC CONNECTOR	PIVKN1418
CN802	17P FFC CONNECTOR	PIVKN1421
CN102	20P FFC CONNECTOR	PIVKN1445
KN1-KN3	EARTH METAL LABEL	PIVNF1109
X602	CHIP CERAMIC RESONATOR (20MHz)	PIVRW1634
X501	CHIP CERAMIC RESONATOR (10MHz)	PIVSS1114
X901	CHIP CERAMIC RESONATOR (24MHz)	PIVSS1115
IC SOCKET FOR IC603		PIVKH1012

## AVJB ASSY SEMICONDUCTORS

IC102,IC201	PIBA4560F
IC191	PIPD0236AM
IC101	PIPD2029A(L)
IC901	PITC74HCU04AF
IC304-IC306	PITC7S02F
IC303	PITC7S04F
IC301,IC302	PITC7WU04F
Q123,Q223	PI2PB709A
Q514	PI2PD601A
Q501,Q502,Q601,Q602	PI2SC1740S
Q124,Q224	PI2SD2114K
Q523,Q524	PIPDTA124EK
Q121,Q122,Q221,Q222	PIPDTC124EK
Q521,Q522	PIPDTC124EK
D401,D501,D601	PIMA111
D113	PIUDZS6.2B

Mark	No.	Description	Part No.
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### COILS

L101,L191,L201,L301,L801	PILAU220J
L901	PILAU220J
L903 PULSE TRANS.	PIPTL1003
L902 NOISE FILTER	PIRTF1167
L302,L303 CHIP BEAD	PIVTL1098

### SWITCH

S30	PIVSH1020
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### CAPACITORS

C103,C203	PICCSQCH820J50
C310,C322	PICCSQCH120J50
C320	PICCSQCH270J50
C311	PICCSQCH330J50
C106,C111,C206,C211	PICCSQCH470J50

C307,C308	PICCSQCH470J50
C114,C191,C193,C801,C901	PICEAT101M10
C903	PICEAT101M10
C503,C603	PICEAT102M6R3
C300	PICEAT470M16

C101,C201	PICEAT471M16
C107,C207	PICEGA470M25
C104,C113,C204	PICEZA470M25
C112,C212,C224,C904	PICKSQYF103Z50
C102,C105,C115,C192,C202	PICKSQYF104Z25

C205,C228,C301-C306,C309	PICKSQYF104Z25
C321,C333,C401,C502,C511	PICKSQYF104Z25
C516,C602,C802,C902,C906	PICKSQYF104Z25
C911-C913	PICKSQYF104Z25
C108,C208	PICQ MBA332J50
VC301 (20pF)	PIVCM-008

### RESISTORS

R508,R518,R607	PIRN1/10SC75R0D
R106,R111,R206,R211	PIRN1/10SE4702D
Other Resistors	PIRS1/10S□□□J

### OTHERS

CN501 4P MINI DIN SOCKET	PIAKP7008
CN301 KR CONNECTOR	PIB4B-PH-K-S
JA101 4P PIN JACK	PIDKB1038
JA801 OPTICAL MODULE	PIGPIF32T
JA401 REMOTE CONTROL JACK	PIRKN1004

PCB BINDER	PIVEF1040
JA601 1P PIN JACK	PIVKB1063
JA901 1P PIN JACK (NI,BLK)	PIVKB1077
CN19 8P FFC CONNECTOR	PIVKN1239
CN191 14P FFC CONNECTOR	PIVKN1245

CN901 17P FFC CONNECTOR	PIVKN1248
SCREW TERMINAL	PIVNE1948
KN301 EARTH METAL	PIVNF1084
X302 CRYSTAL (16MHz)	PIVSS1081
X301 CRYSTAL (18.432MHz)	PIVSS1116

Mark	No.	Description	Part No.
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## J POWER SUPPLY ASSY

### SEMICONDUCTORS

△ IC201	PIAN1431T
△ IC411	PIVZF1048
△ IC711	PIVZF1060
△ Q101,Q103	PIVZF1062
△ Q102	PI2SC3377

Q511	PI2SC1740S
△ D511	PI10ELS2
D512,D514	PI1SS270A
△ D105	PI1SS270A
△ D104	PIMTZJ2.4B

D513	PIMTZJ8.2B
△ D106	PIPS2561L1-1VM
△ D103	PIRD18FB2
△ D311	PI3L20U
△ D101	PIVZF1044

△ D108,D110	PIVZF1045
△ D211	PIVZF1058
△ D411	PIVZF1059
△ D212	PIVZF1061

### OTHERS

△ P311 FUSE (1A)	PIVEK1041
△ P211 FUSE (1.5A)	PIVEK1048
△ F101 FUSE (2A)	PIVEK1049

## K MSWB ASSY

### SWITCH

△ S10	PIASG1006
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### CAPACITOR

△ C10 (0.01μ/AC250V)	PIACG7010
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### OTHERS

CN10 AC CORD SOCKET	PIRKP1751
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## L SCCB ASSY

### SEMICONDUCTORS

Q100	PI2SA933S
Q107,Q108	PIPDTC124EK
D114	PIMA111
D101,D103	PIUDZS5.1B

### CAPACITORS

C110,C126	PICCSQCH271J50
C106,C116,C125,C128	PICKSQYF104Z25

### RESISTORS

R109	PIRN1/10SC75R0D
Other Resistors	PIRS1/10S□□□J

### OTHERS

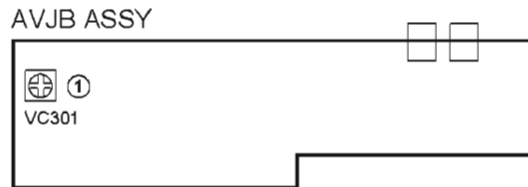
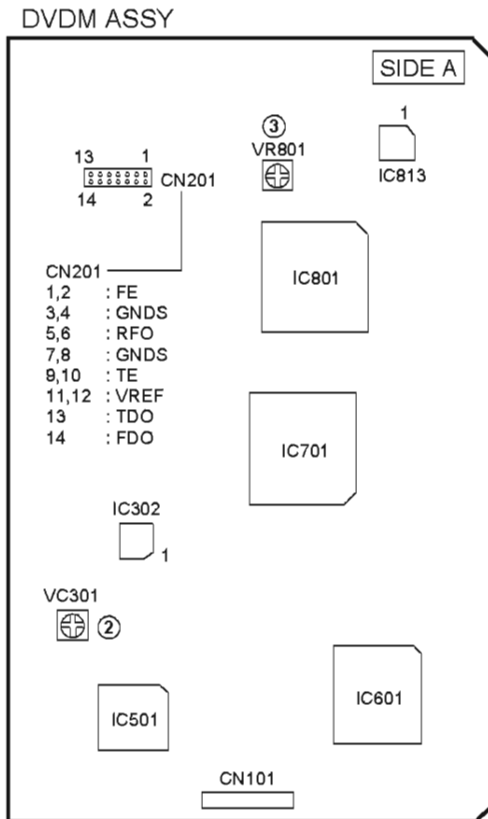
PCB BINDER	PIVEF1040
JA100 RGB CONNECTOR	PIVKB1037
CN100 8P FFC CONNECTOR	PIVKN1239
PC BOARD (SCCB)	PIVNP1629



# 6. ADJUSTMENT

## 6.1 ADJUSTMENT ITEMS AND LOCATION

### ■ Adjustment Points (PCB Part)



### ■ Adjustment Items

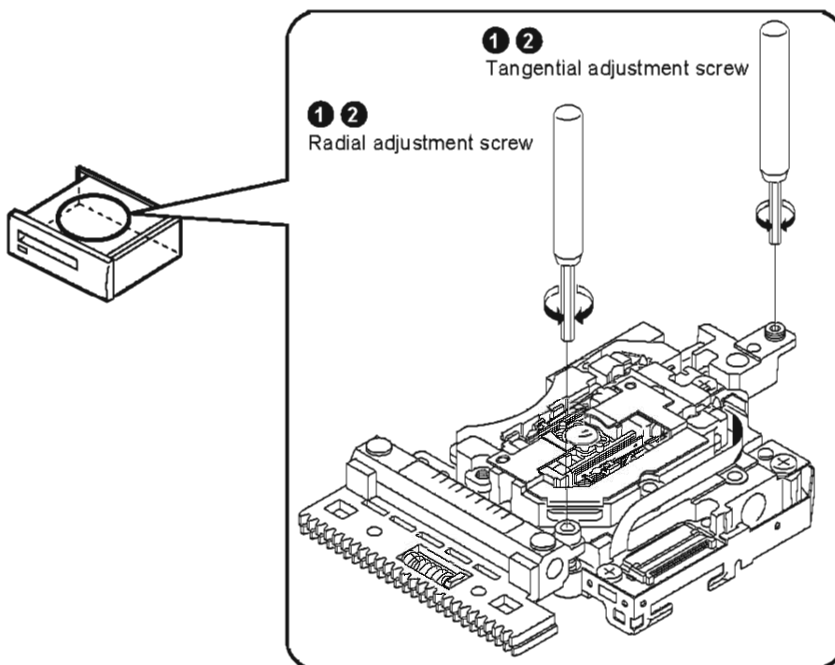
[Mechanical Part]

- ① Tangential Skew and Radial Skew Coarse Adjustment
- ② DVD Jitter Adjustment

[Electrical Part]

- ① 18MHz Master Clock Adjustment
- ② VCO Offset Adjustment
- ③ Video Output Level Adjustment



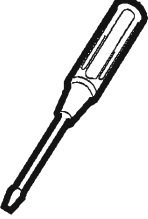




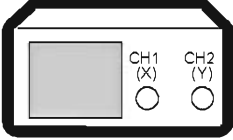

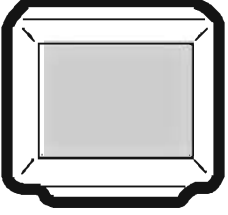
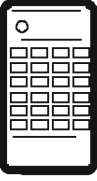

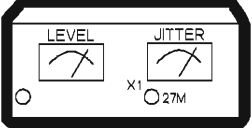

### ■ Adjustment Points (Mechanism Part)



Note 1:  
Remove the tray when adjusting the tangential and radial adjustment screws.

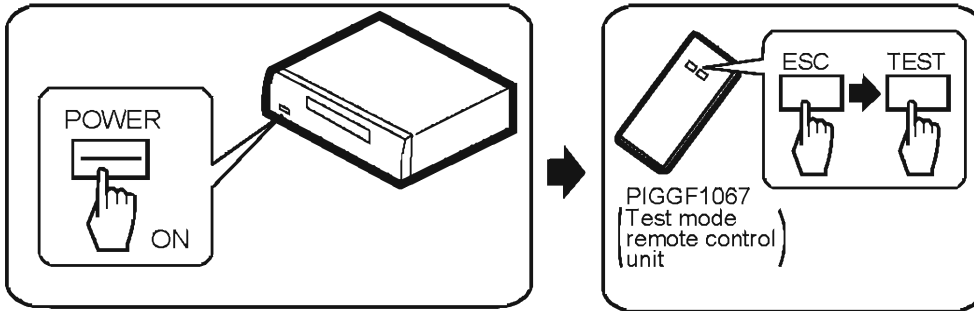
Note 2:  
After the adjustment, stabilize the screw with an adhesive.

## 6.2 JIGS AND MEASURING INSTRUMENTS

 <p>CD test disc (PIABEX-784)</p>	 <p>DVD test disc (PIDVD-MJK1)</p>	 <p>⊖ Screwdriver (medium)</p>	 <p>⊖ Screwdriver (small)</p>
 <p>⊖ Precise screwdriver</p>	 <p>⊕ Screwdriver (large)</p>	 <p>⊕ Screwdriver (medium)</p>	 <p>Dual-trace oscilloscope (with delay) Frequency band <math>\geq 40\text{MHz}</math></p>
 <p>Frequency counter Display digit <math>\geq 8</math>-digit</p>	 <p>TV monitor</p>	 <p>Test mode remote control unit (PIGGF1067)</p>	 <p>Hexagonal screwdriver</p>
 <p>Jitter Meter</p>	 <p>Equalizer Unit</p>		

## 6.3 TEST MODE

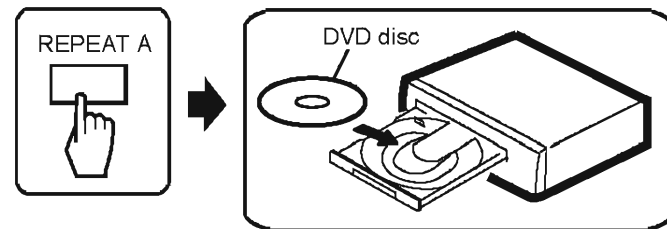
### TEST MODE: ON



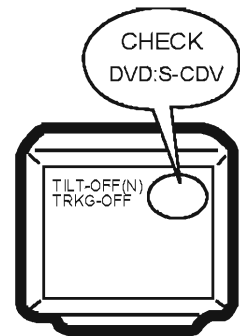
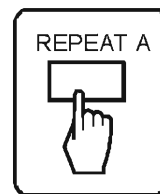
### TEST MODE: DISC SET

• With TRAY

<TRAY OPEN>

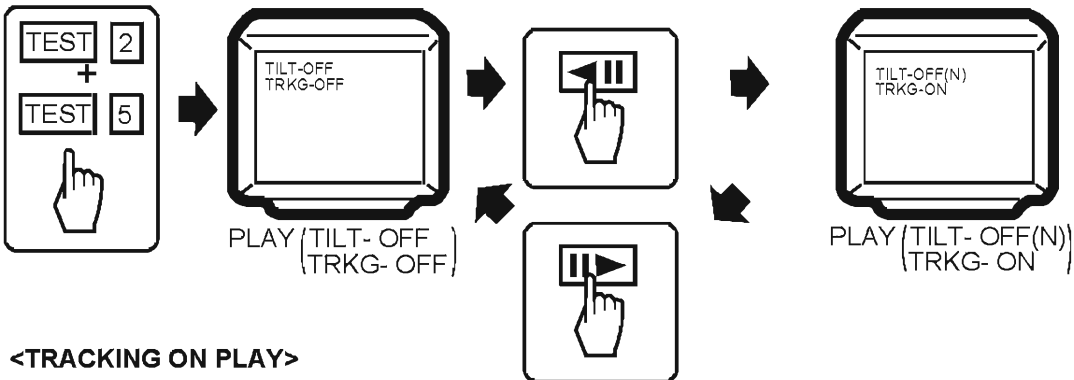


<TRAY CLOSE>

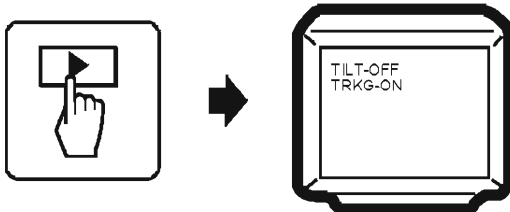


### TEST MODE: PLAY

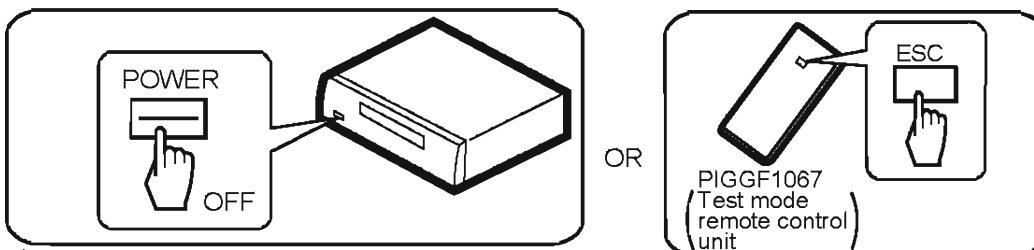
<TRACKING OFF PLAY>



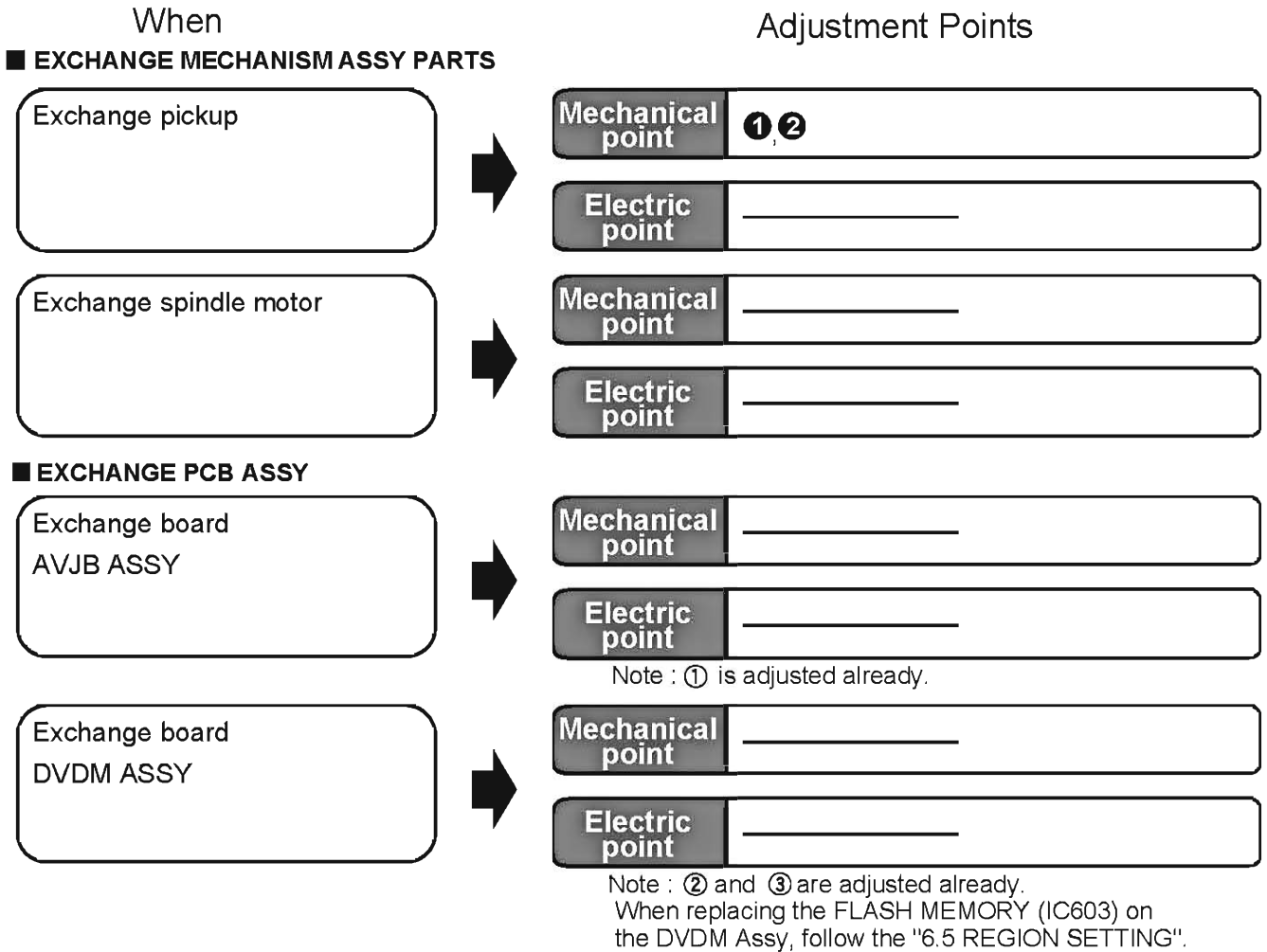
<TRACKING ON PLAY>



### TEST MODE: OFF

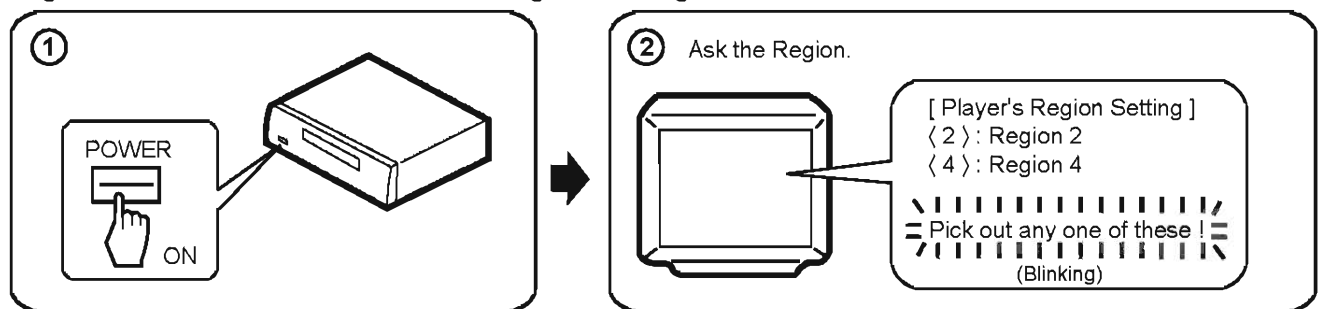


## 6.4 NECESSARY ADJUSTMENT POINTS

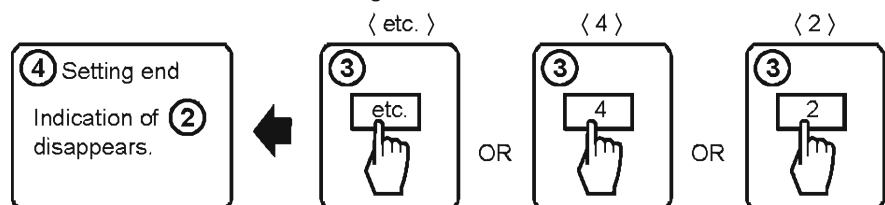


## 6.5 REGION SETTING

Perform this operation after confirming the region number of each destination on the cover.  
Region number decided once can be changed never again.



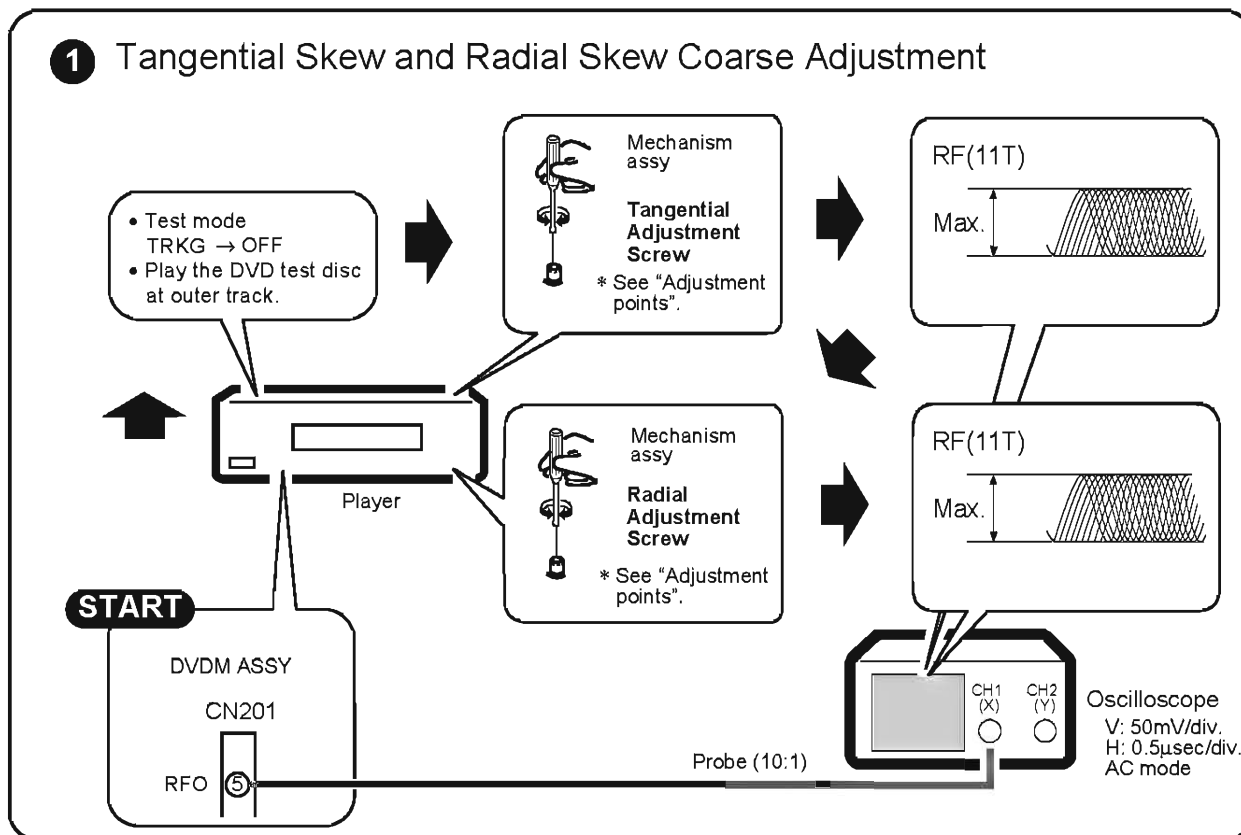
Note : Region is decided by destination of the player automatically, and there is a case when it doesn't ask on this screen. There is not need of this setting at that occasion.



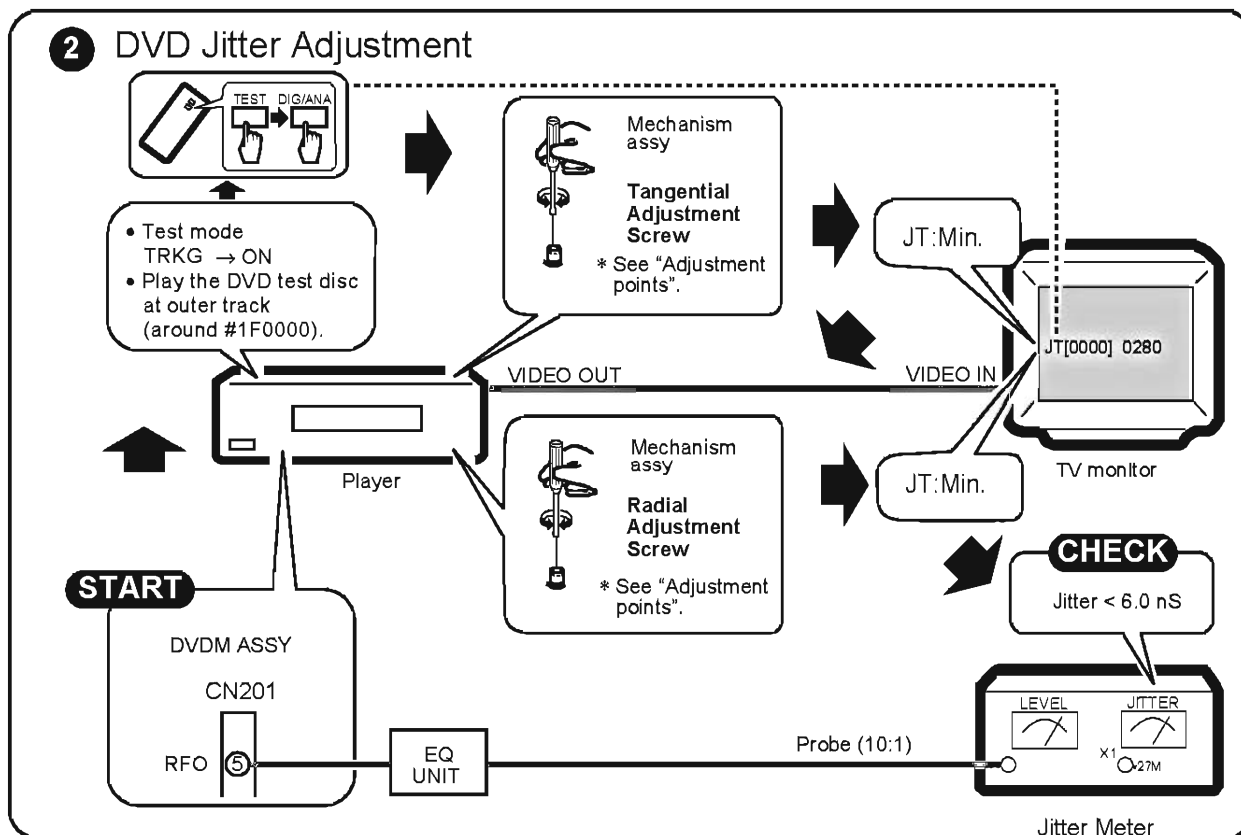
Key input the number with the test mode remote control unit (PIGGF1067).

## 6.6 MECHANICAL ADJUSTMENT

### 1 Tangential Skew and Radial Skew Coarse Adjustment

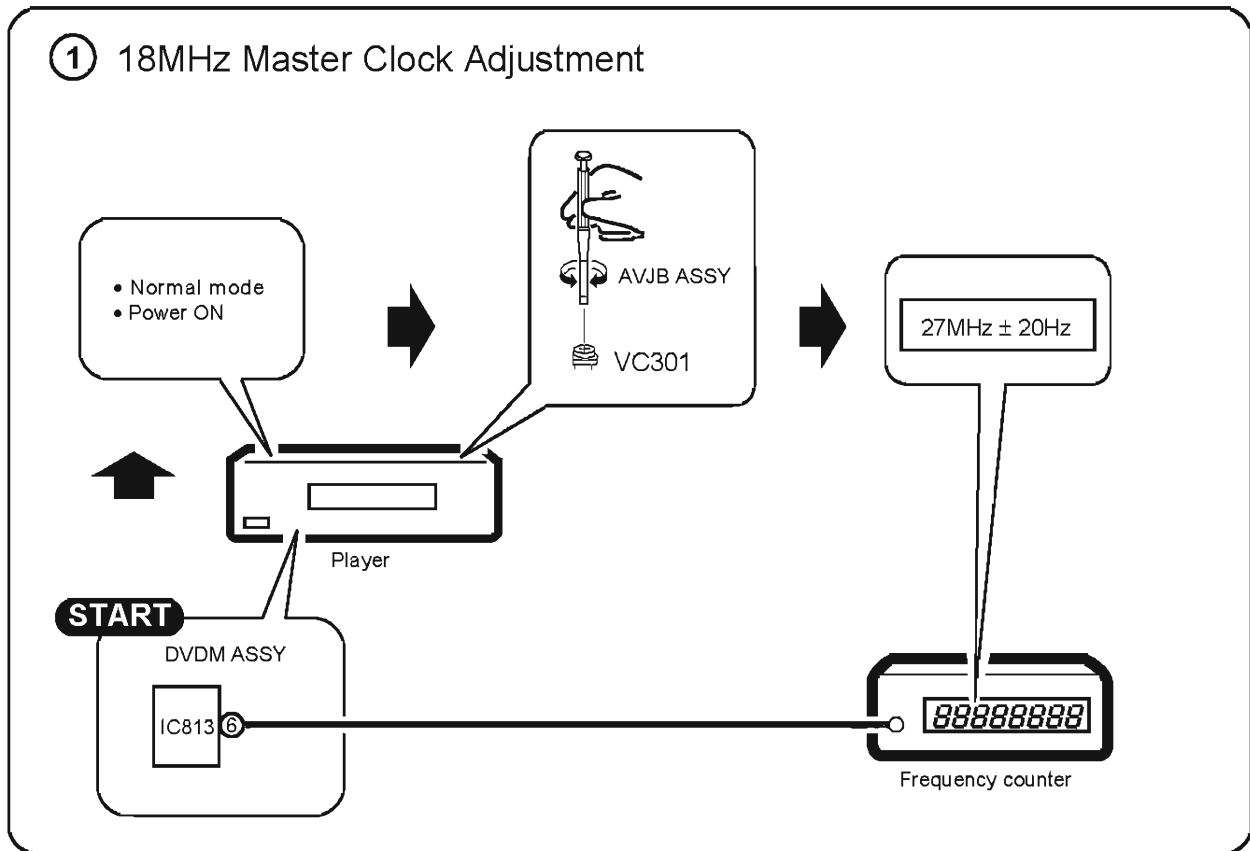


### 2 DVD Jitter Adjustment

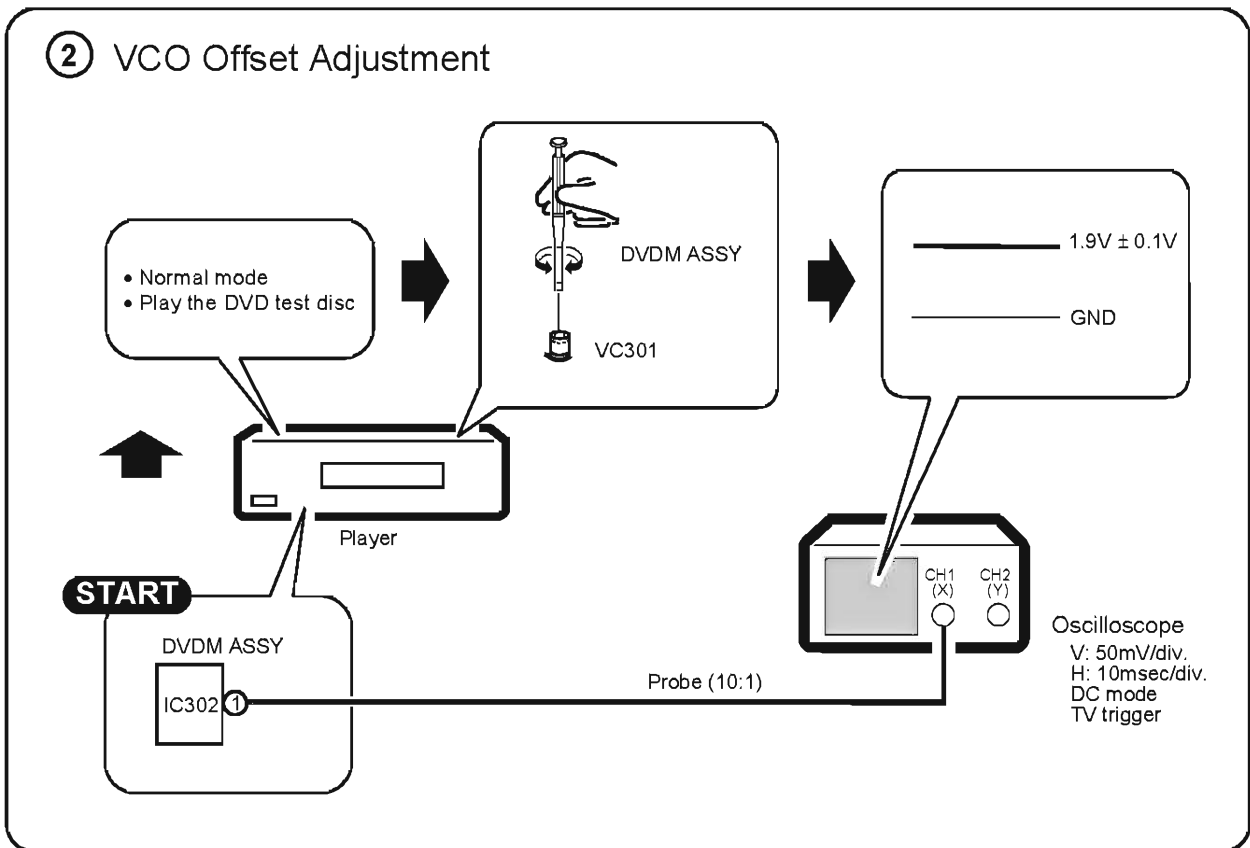


## 6.7 ELECTRICAL ADJUSTMENT

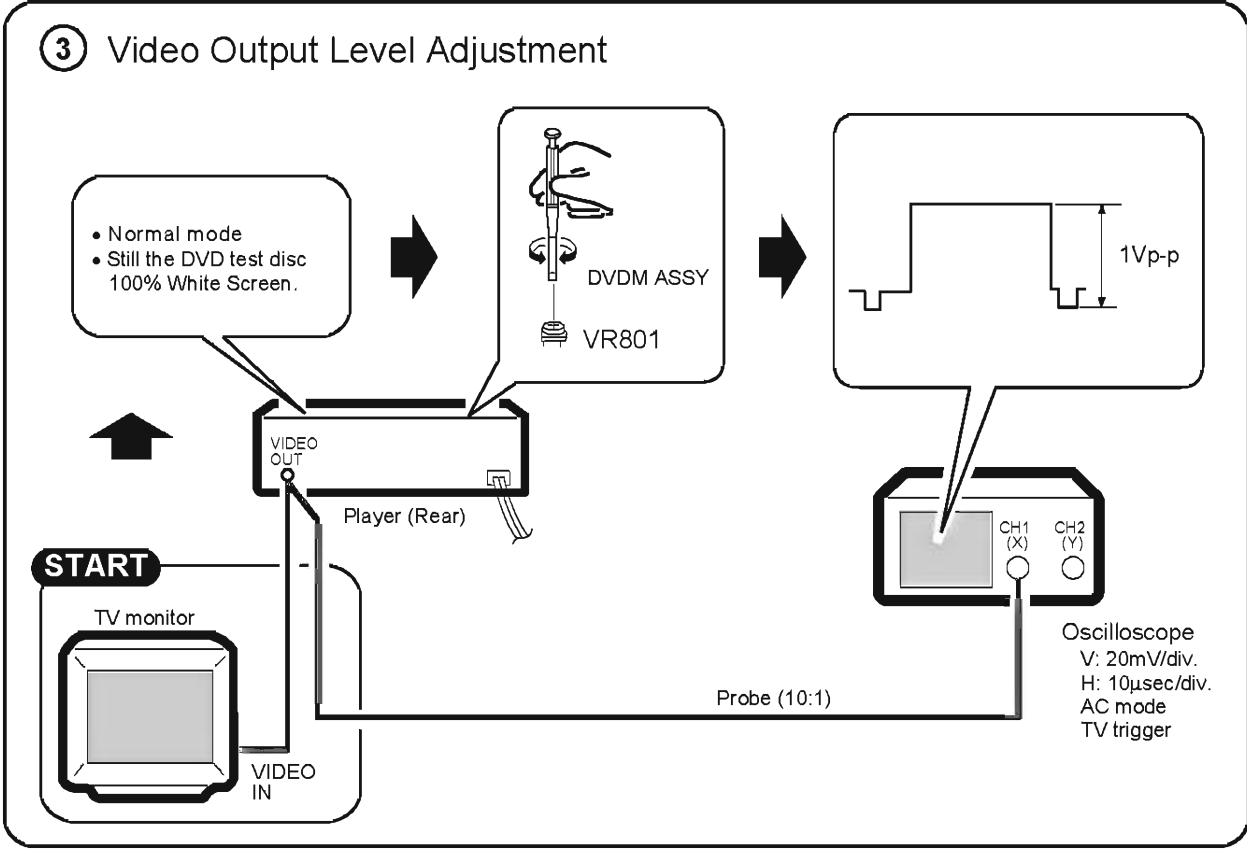
### ① 18MHz Master Clock Adjustment



### ② VCO Offset Adjustment

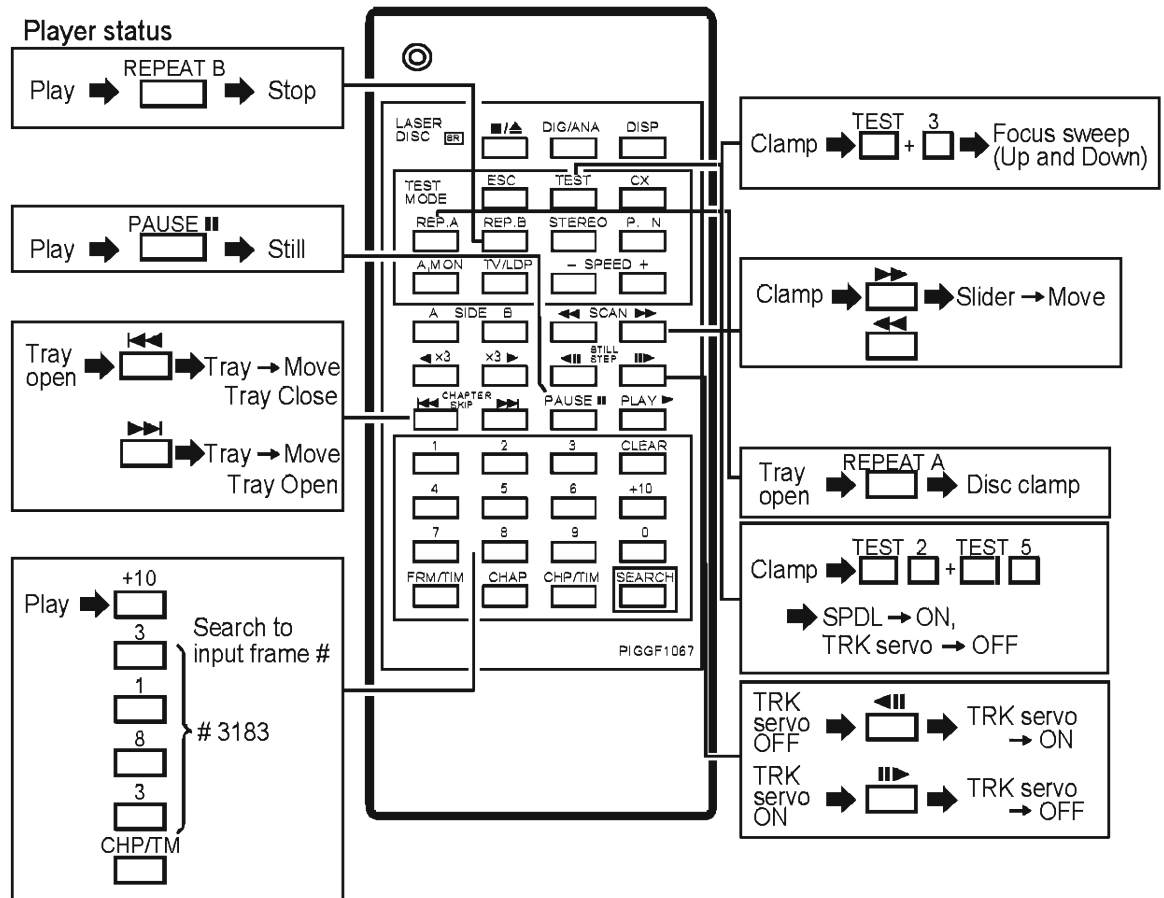


### ③ Video Output Level Adjustment

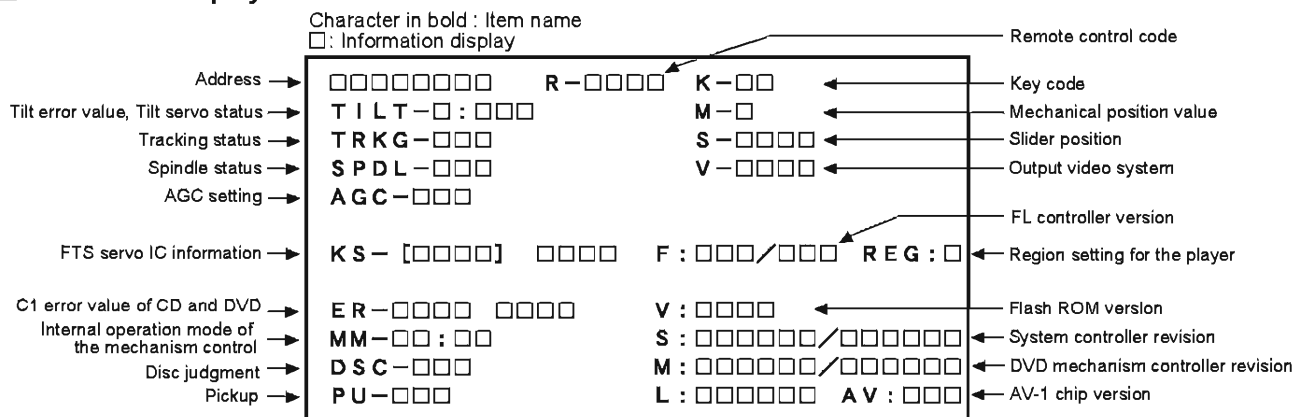


## 6.8 OPERATIONS IN THE TEST MODE

### ■ Test Mode Remote Control Unit (PIGGF1067)

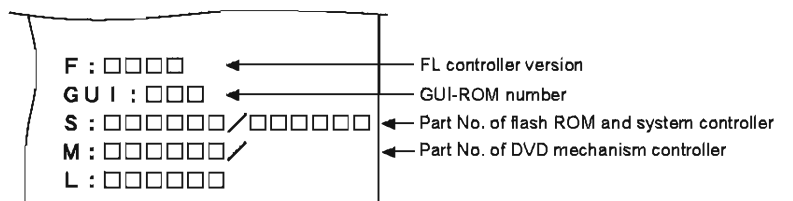


### ■ TV Monitor Display



First screen display

Note : Switch the first and second screen by pressing the [DISPLAY] key on the remote control unit.



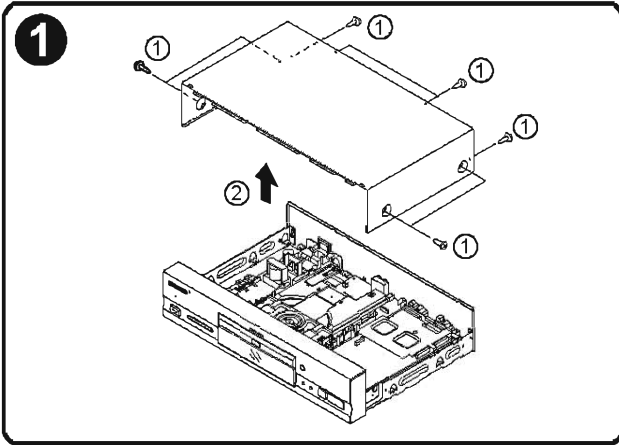
Second screen display (at lower right portion of the screen)



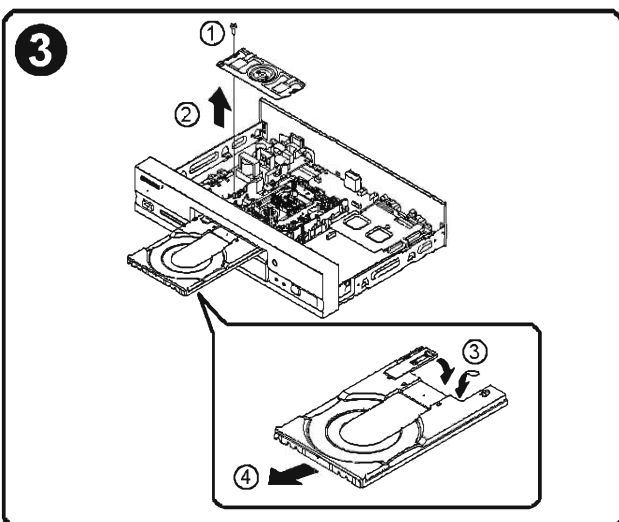
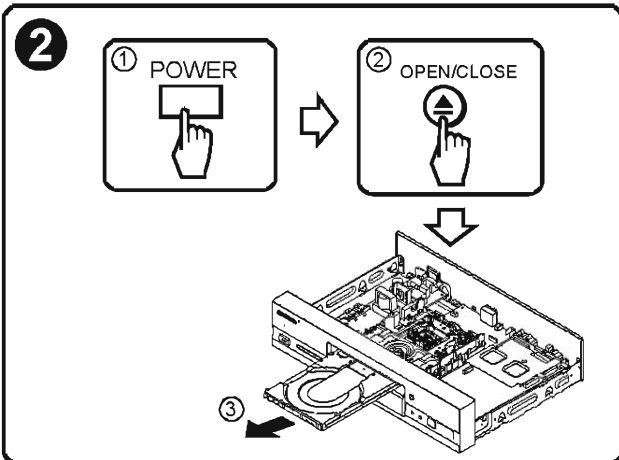
# 7. GENERAL INFORMATION

## 7.1 DISASSEMBLY

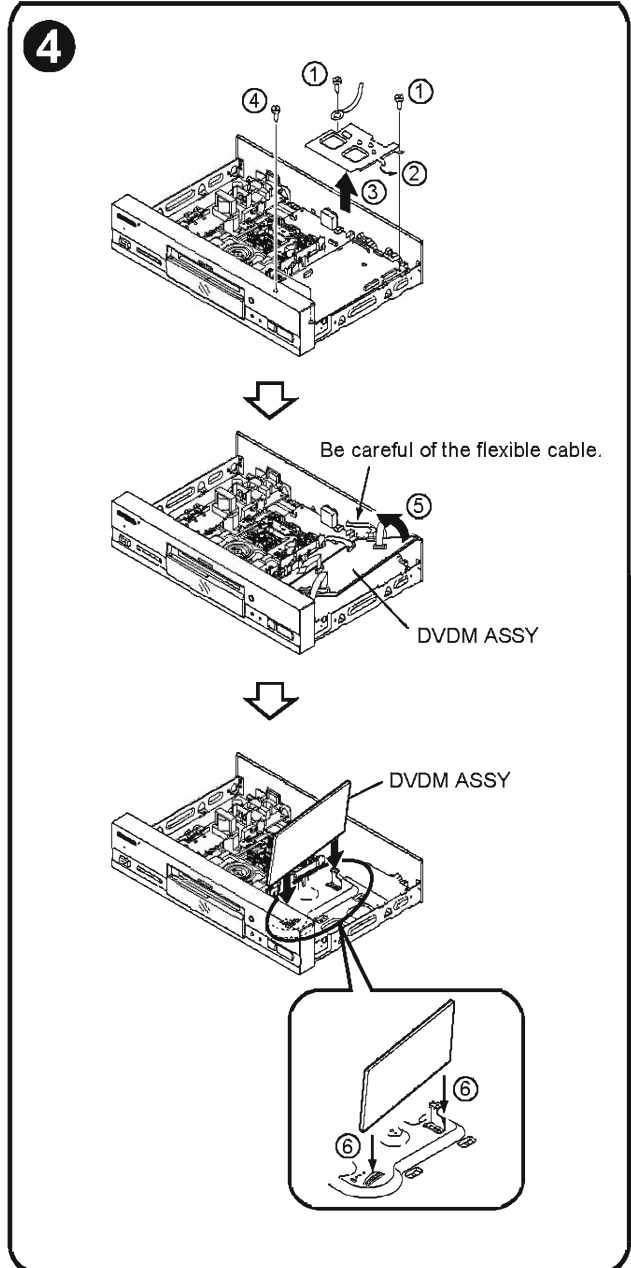
### BONNET



### DISC TRAY

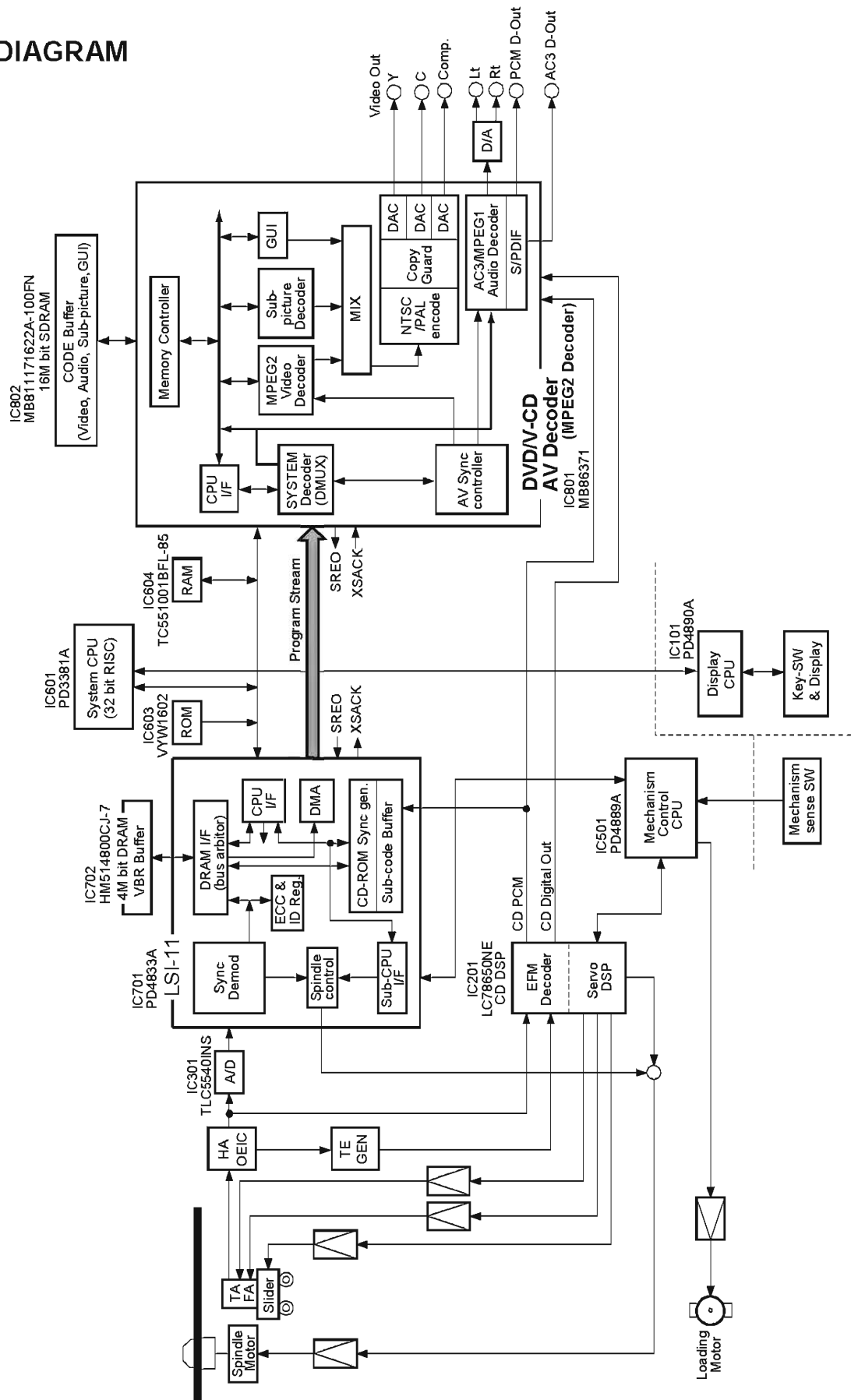


### DVDM ASSY



Note : For the mechanism section disassembly, refer to the service guide.

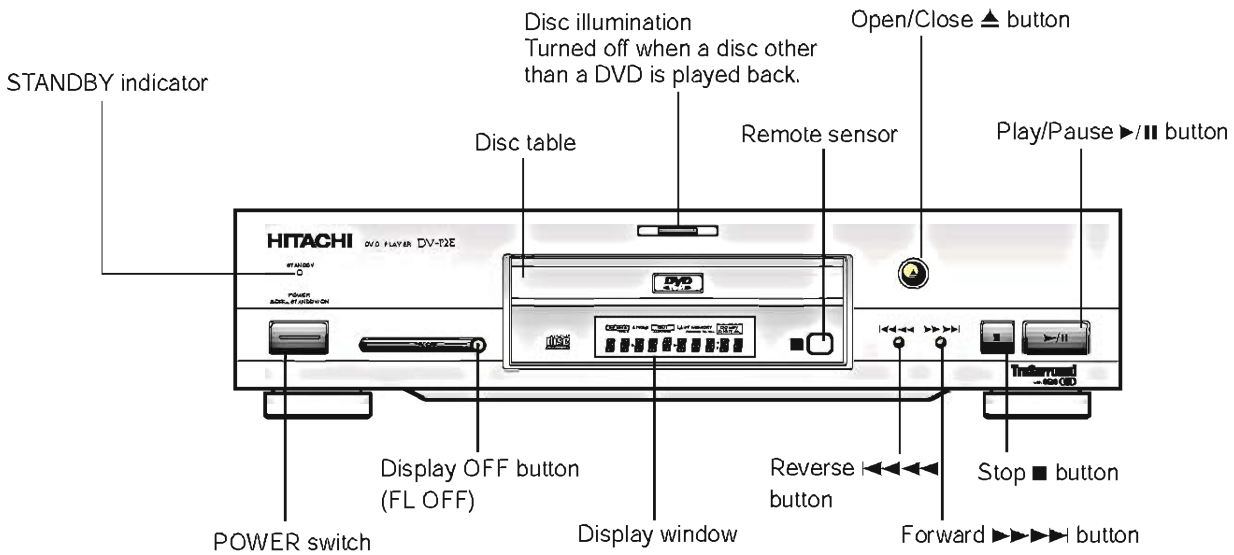
## 7.2 BLOCK DIAGRAM



# 8. PANEL FACILITIES AND SPECIFICATIONS

## 8.1 PANEL FACILITIES

### FRONT PANEL



### REAR PANEL

#### Digital Output Jack (Coaxial)

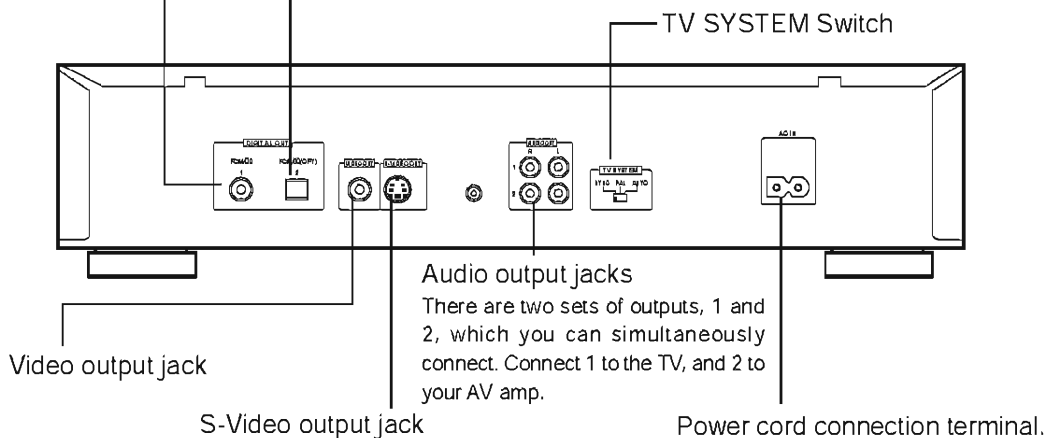
This is used for output of the digital audio signal recorded on CDs and Video CDs. Depending on the components you connect this digital output to, noise may be generated.

When connecting to an AC-3 compatible component, use the PCM/DOLBY DIGITAL jack. (Refer to the chart on the right.)

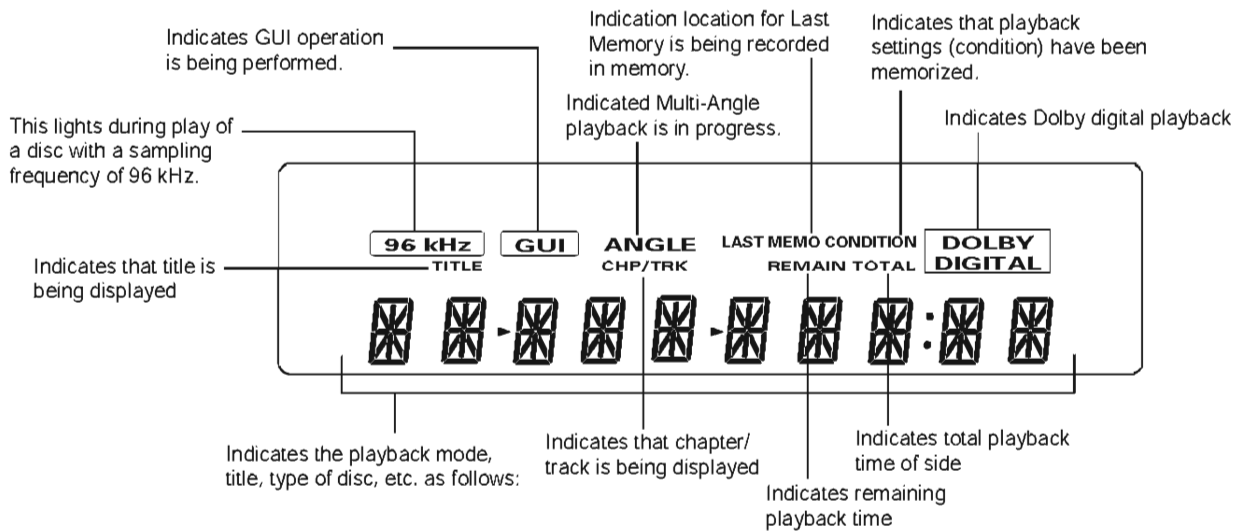
Your amp	Regular AV amp	Coaxial	Connect to the coaxial jack, and select PCM from the menu.
		Optical	Connect to the optical jack, and select PCM from the menu.
	AC-3 compatible amp	Coaxial	Connect to the PCM/DOLBY DIGITAL jack, and select PCM/DOLBY DIGITAL from the menu.
		Optical	Connect to the optical jack, and select PCM/DOLBY DIGITAL from the menu.

#### Optical Digital Output

Audio optical digital output. Switchable between PCM/DOLBY DIGITAL and PCM output.

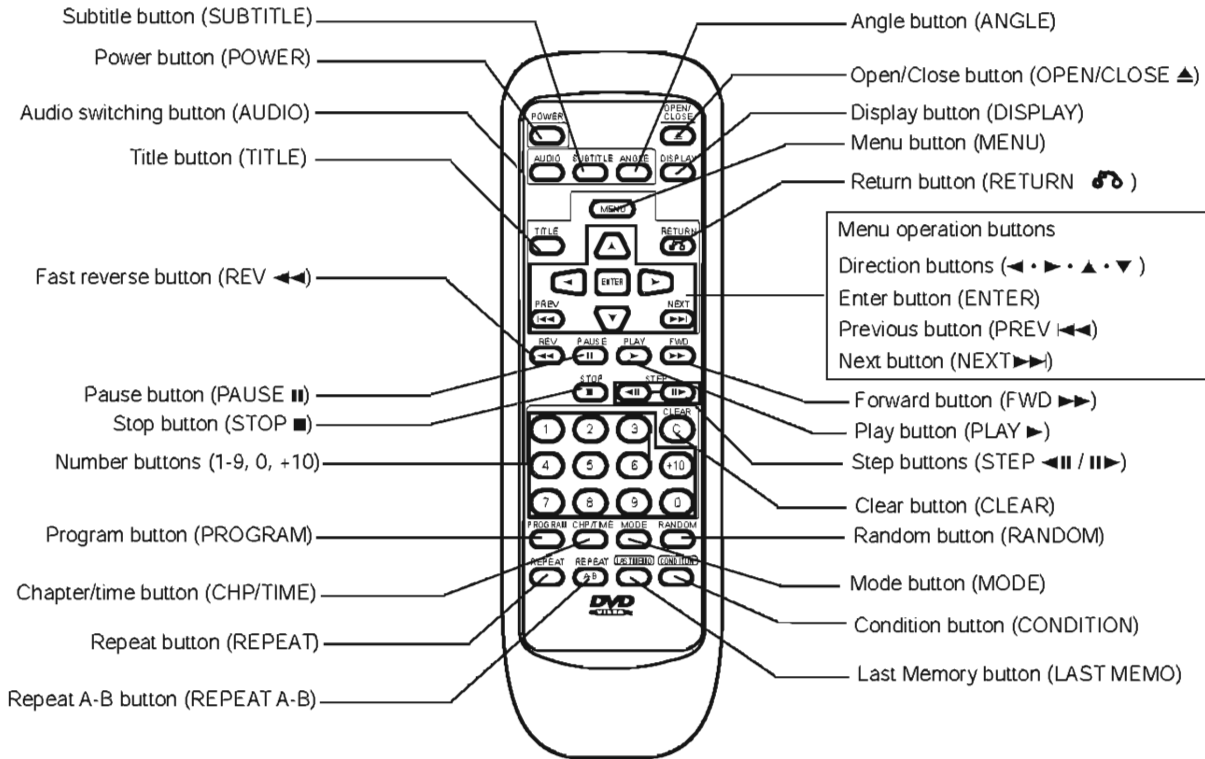


## ■ DISPLAY WINDOW



<code>C D</code>	: Compact disc	<code>R_SID</code>	: When side repeat is selected
<code>DVD</code>	: DVD	<code>REPEAT TTL</code>	: When title repeat is selected
<code>VCD</code>	: Video CD	<code>REPEAT AAL</code>	: When all repeat is selected
<code>PBC PLAY</code>	: Playback control playback on Video CD	<code>REPEAT PGM</code>	: When program repeat is selected
<code>OPEN</code>	: Disc table is opening or is open	<code>PLAY</code>	: Playback
<code>CLOSE</code>	: Disc table is closing	<code>STOP</code>	: Stop
<code>RDM</code>	: Random playback	<code>PAUSE</code>	: Pause
<code>PROGRAM</code>	: Program mode	<code>NO DISC</code>	: No disc
<code>R_TRK</code>	: Repeat mode	<code>-- OFF --</code>	: Power is turned off
<code>R_A</code>	: Start point of 2 point repeat playback	<code>MENU</code>	: Menu mode
<code>R_AB</code>	: 2 point repeat playback	<code>TITLE</code>	: Title menu
<code>R_TTL</code>	: Repeat playback of the title	<code>CHAPTER</code>	: Chapter menu
<code>R_CHP</code>	: Repeat playback of the chapter	<code>SUB-TITLE</code>	: Subtitle menu
<code>R_SID</code>	: Disc repeat	<code>SETUP</code>	: Set-up menu
<code>CINEMA</code>	: Cinema mode	<code>AUDIO</code>	: Audio menu
<code>STANDARD</code>	: Standard mode	<code>ANGLE</code>	: Angle menu
<code>REPEAT A</code>	: When memory repeat is selected	<code>COND_MEMO</code>	: Condition memory
<code>REPEAT TRK</code>	: When track repeat is selected	<code>LAST_MEMO</code>	: Last memory
<code>REPEAT CHP</code>	: When chapter repeat is selected		

## ■ REMOTE CONTROL



## 8.2 SPECIFICATIONS

### General

System ..... DVD system, Video CD system and Compact Disc digital audio system  
 Laser ..... Semiconductor laser: wavelength 635 nm  
 Power requirements: ..... AC 110-120 V/220-240 V, 50/60 Hz  
 Power consumption ..... 22 W (<3 W)  
 Weight ..... 2.9 kg (6 lb 6 oz)  
 Dimensions ..... 420 (W) x 284 (D) x 104 (H) mm  
 (16 <sup>9</sup>/<sub>16</sub> x 11 <sup>5</sup>/<sub>16</sub> x 4 in.)  
 (Not including protruding cables, etc.)  
 Operating temperature ..... +5°C to +35°C (+36°F to +96°F)  
 Operating humidity ..... 5% to 85% (no condensation)

### S-Video Output

Y (luminance) - Output level ..... 1 Vp-p (75Ω)  
 C (color) - Output level ..... 286 mVp-p (75Ω)  
 Jacks ..... S-VIDEO jack

### Video Output

Output level ..... 1 Vp-p (75Ω when loaded, synchronous negative)  
 Jacks ..... RCA



### Audio Output (2 pairs)

Output level  
 During audio output ..... 200 mVrms (1 kHz, -20 dB)  
 Number of channels ..... 2  
 Jacks ..... RCA

### Digital audio characteristics

Frequency response	4 Hz to 22 kHz (DVD fs: 48 kHz) 4 Hz to 20 kHz (CD)
S/N ratio	115 dB (EIAJ)
Dynamic range	97 dB (EIAJ)
Total harmonic distortion	0.003 %
Wow and flutter	Limit of measurement (±0.001% W. PEAK) or lower (EIAJ)

### Other Terminals

Optical digital output (PCM/ ) ..... Optical digital jack  
 Coaxial digital output (PCM/ ) ..... RCA jack

### Accessories

Remote control unit ..... 1  
 AA (LR6) dry cell batteries ..... 2  
 Audio cord ..... 1  
 Video cord ..... 1  
 Power cord ..... 1  
 Operating Instructions ..... 1

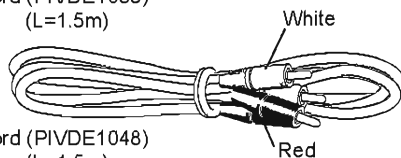
### NOTE:

The specifications and design of this product are subject to change without notice, due to improvement.

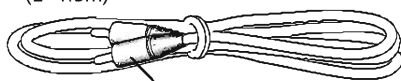
"Dolby, Digital (AC-3)" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

### ■ Accessories

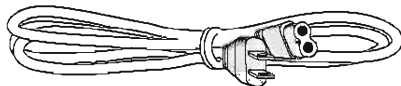
Audio cord (PIVDE1033)  
 (L=1.5m)



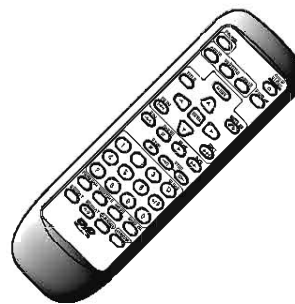
Video cord (PIVDE1048)  
 (L=1.5m)



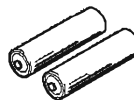
Power cord (PIADG1154)



Remote control unit (PIVXX2595)



Batteries ..... 2



### Other included items :

- Warranty card
- Operating Instructions (this manual)

# Service Manual

**HITACHI**

**SERVICE GUIDE**

DVD PLAYER

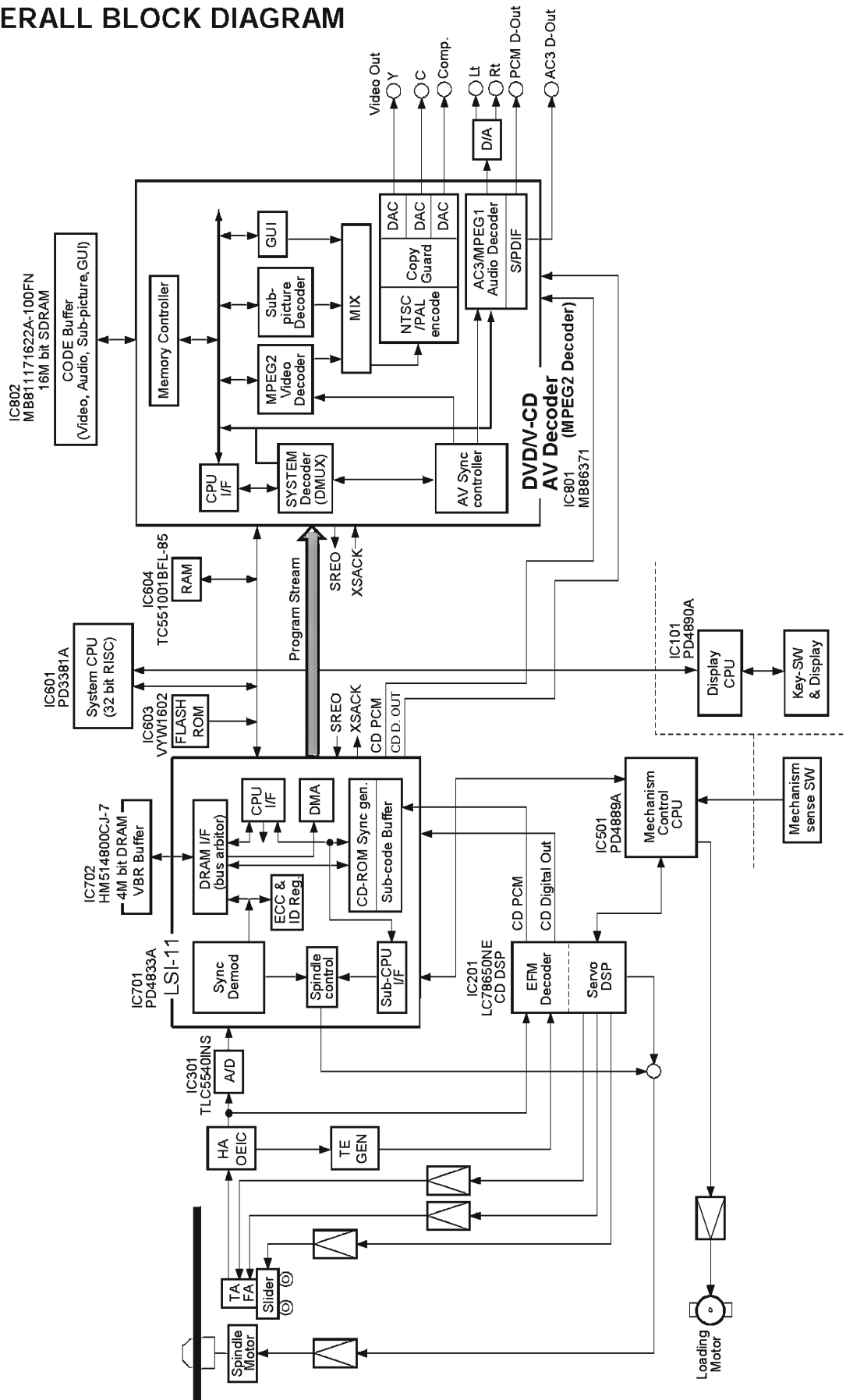
# DV-P2E

## **CONTENTS**

- 1. CIRCUIT DESCRIPTION ..... 2
- 2. TEST MODE ..... 6
- 3. IC INFORMATION ..... 15
- 4. FL INFORMATION ..... 35

# 1. CIRCUIT DESCRIPTION

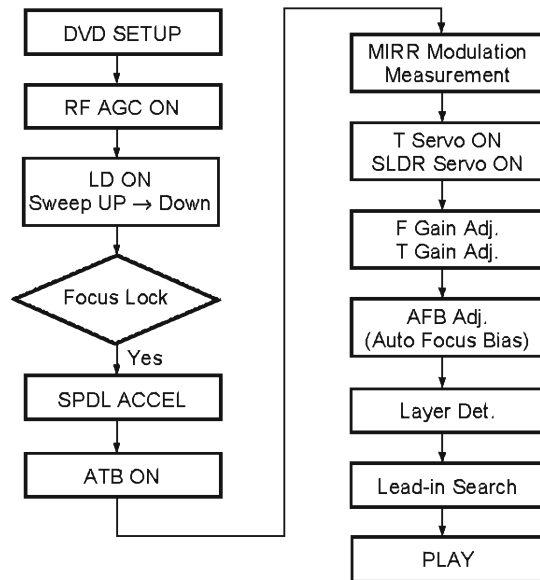
## 1.1 OVERALL BLOCK DIAGRAM





## 1.2 EXPLANATION OF EACH MOVEMENT

### 1.2.1 Sequence Up to Playback



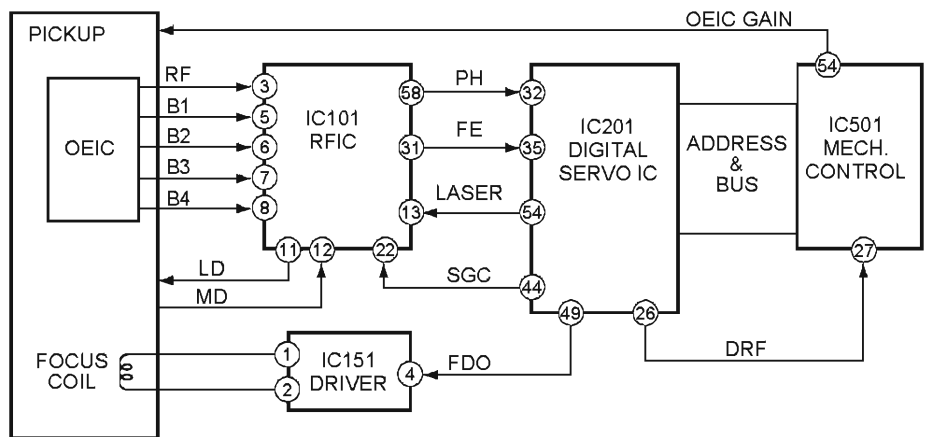
### 1.2.2 Focus Servo

FE generated in the RF IC is sent to the Digital servo IC.

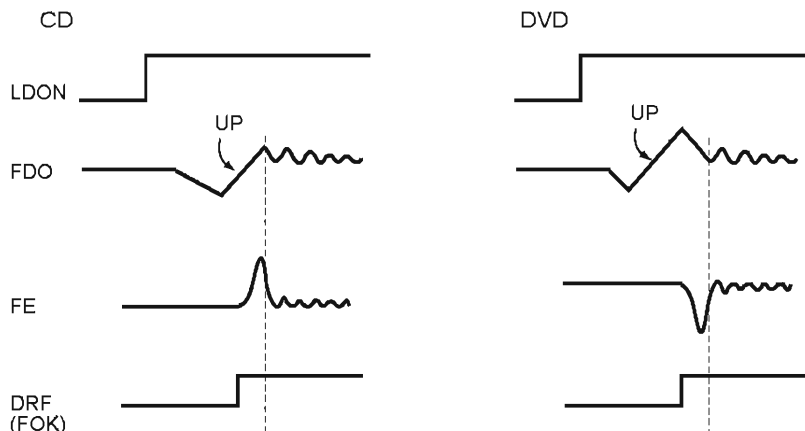
For a DVD, the servo is turned on during the transition from "Up" to "Down" of the first-order sine wave. For a CD, it turns on during the transition from "Down" to "Up" of the first-order sine wave.

When the servo is turned on, the level of PH (the envelope of the bright side of RF) increases, and DRF becomes H. The kick-brake pulses, such as those for FOCUS jump, are also output from pin 49 of IC201.

#### • FOCUS SERVO



#### • FOCUS LOCK TIMING



### 1.2.3 Tracking / Slider Servo

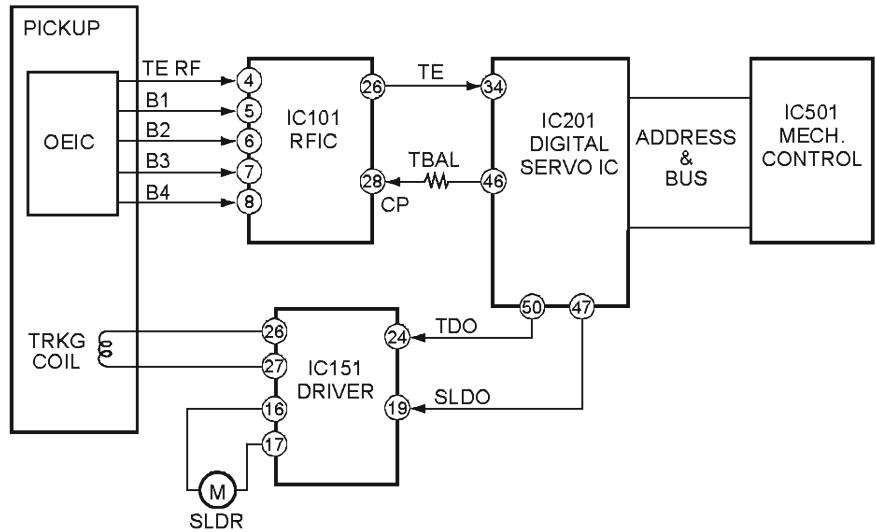
**ATB:** The tracking balance compensation is achieved by outputting the offset from the TBAL output at pin 46 of the digital servo IC, and by biasing the charge pump resistor for phase-difference error of RFIC.

The difference is detected by processing TE at pin 34 of IC 201 with an internal digital equalizer.

**TDO:** In addition to the servo output, the low-band components, such as the kick-brake for jump, are added for TDO output.

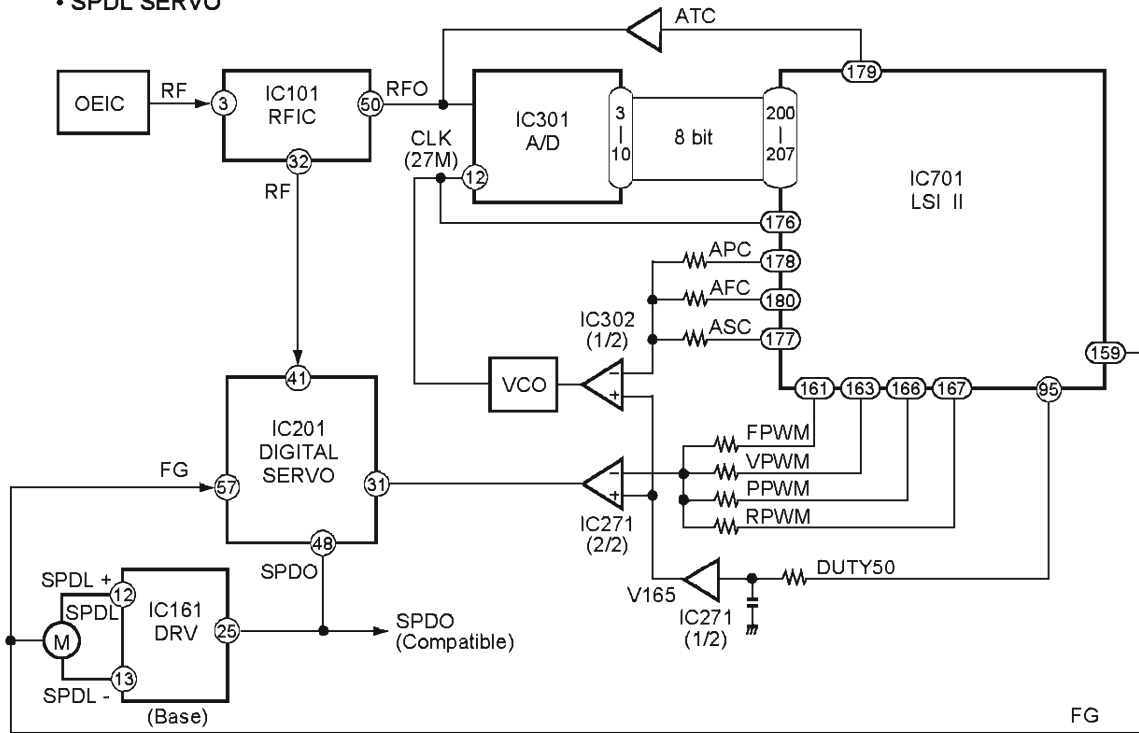
**SLDO:** The low-band components of TE are processed by the internal digital equalizer, and deadband is added for SLDO output. The offset voltage for pickup movement is also included in the SLDO output.

#### • TRACKING / SLIDER SERVO



### 1.2.4 SPINDLE SERVO

#### • SPDL SERVO



For a CD, the RF signal output from pin 32 of the RF IC is converted to binary in IC201. By comparing the binary value with the reference CLK (clock), the SPDL ERR signal is output from pin 48.

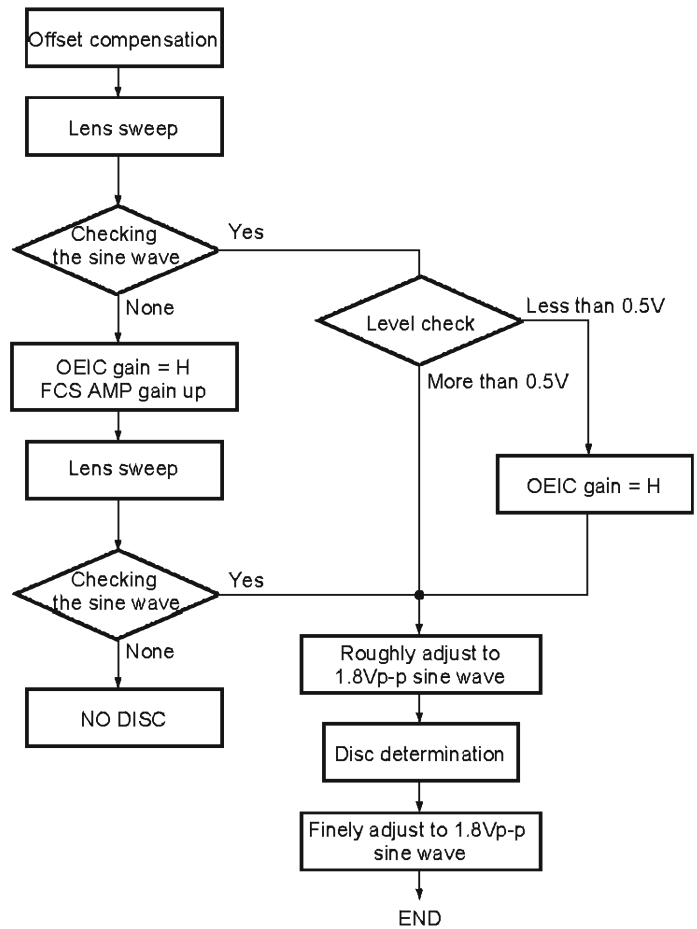
For a DVD, the SPDL ERR signal is generated from the PWM signal output from LSI-II. Upon receiving this signal via pin 31, IC201 also outputs it from pin 48, switching from the CD SPDL ERR signal.

## 1.2.5 Disc Determination

Determination is achieved by checking the sine wave by sweeping the lens with the OE IC gain at L and the FSC error amplifier (SGC) at the default setting. If no sine wave is detected, checking is retried after switching the OE IC gain to H and increasing the gain of the FSC error amplifier (SGC). If no sine wave is detected again, it is regarded as the NO DISC condition.

If one half of the sine wave detected at the first lens sweep is of a value less than 0.5 V, the OE IC gain is set to H and the peak-to-peak value of the sine wave is roughly adjusted to 1.8 Vp-p.

By sweeping the lens around the height where the sine wave has been detected, disc determination is performed, and the sine wave is finely adjusted to 1.8 Vp-p.



## 2. TEST MODE

### 2.1 HOW TO ENTER THE TEST MODE

There are three ways of entering the test mode.

1. Short-circuit the terminals (TP6006 and TP6007) for test mode entry located at the side of the system control IC (IC601) of DVD ASSY, and turn the power on.
2. Press the [ESC] key and the [TEST] key on the Service Remote Control [PIGGF1067] while the player is in the power on mode.
3. Connect a personal computer to the RS232C terminal (CN106) and input the entry command (TE) of the test mode from the personal computer.

Note: FL indication and LED come all to light until key operation is done when entering the test mode.

### 2.2 RELEASE THE TEST MODE

There are three methods to escape the test mode.

1. Turn the power off.
2. Press [ESC] key of the remote control unit. At this time, reset it for a while.
3. Connect a personal computer with the RS232C terminal (CN106), and input normal mode entry command (NE) from the personal computer.

### 2.3 THE EXPLANATION OF EACH FUNCTION

The function that can be operated in the test mode is as the following. Use a LD remote control unit in the test mode.

#### (1) Door Open/Close

1. Press [REPEAT A-B] (48) key of the remote control unit.
2. Press [OPEN/CLOSE] key of the player from the stop condition.

#### (2) Stop

1. Press [REPEAT] (44) key of the remote control unit.
2. Press [STOP] key of the remote control unit or the player from the stop condition.

#### (3) Play 1 (Demultiplex exist which it tries to output the playback screen)

1. Press [PLAY] (17) key of the remote control unit.
  - DVD rise up at the tracking close. Playback screen may not appear because the NAVI information isn't read in the test mode.

#### (4) Play 2 (Demultiplex is absent which performing trace only)

1. Press [TV/LDP] (0F) key of the remote control unit.
  - Perform only tracing with DVD, and there are no video and audio output.

#### (5) Pause

1. It becomes pause condition by pressing [CX] (0E) key of the remote control unit in the play.
2. Pause ON/OFF changes alternately by pressing [PAUSE] (18) key in the play.

#### (6) Search Address Input Entry

It becomes the address input mode when [+10] key (1F) is pressed. (Indication for the most significant digit : > )

Indicate the last address as the initial condition in this time.

Only in case of DVD, addition search (indication for the most significant digit : + ) and subtraction search (indication for the most significant digit : - ) are able to select in order by pressing [+10] key continuously.

The address where input value was added to the present address is make to search with addition search.

The address where input value was subtracted to the present address is make to search with subtraction search.

In case of CD is only absolute time search.

Also address clear and release from the address input mode are able to perform by 2 steps by pressing [CLEAR] (45) key.

#### (7) Search Address Input

Press [0] to [9] keys of the remote control unit.

Set up the address by the hexadecimal number with DVD.

When [PROGRAM] (4C) key is pressed in the address input mode, input mode changes to hexadecimal number input (Indicates "\*" mark), and [1] to [6] keys are input as [A] to [F].

At this time, [7], [8], [9] and [0] keys are not accepted.

Also the hexadecimal number input and the decimal number input can be changed with toggle.

#### (8) Search Practice

1. Press [CHP/TIM] (13) key of the remote control unit.
  - Practice the on screen no playback (Doesn't demultiplex) after the search with DVD.
2. Press [PLAY] (17) key of the remote control unit.
  - Practice the on screen playback (demultiplex exists) after the search with DVD.

#### (9) Tracking Open

1. Press [STEP FWD] (54) key of the remote control unit in the play condition.
2. Switch the open/close by pressing [PLAY] key of the remote control unit or the player during the play (CD only).

### (10) Tracking Close

1. Press [STEP RVS] (50) key of the remote control unit in the play condition.
2. Switch the open/close by pressing [PLAY] key of the remote control unit or the player during the play (CD only).

### (11) Slider In

1. Press [SCAN RVS] (11) key of the remote control unit in the tracking off condition.
2. Turn the shuttle of the remote control unit in the REV direction (2C to 2F) in the tracking off condition. (DVD only)

### (12) Slider Out

1. Press [SCAN FWD] (10) key of the remote control unit in the tracking off condition.
2. Turn the shuttle of the remote control unit in the FWD direction (28 to 2A) in the tracking off condition. (DVD only)

### (13) Scan In

1. Press [SCAN RVS] (11) key of the remote control unit in the tracking on condition.
2. Turn the shuttle of the remote control unit in the REV direction (2C to 2F) in the tracking on condition.
  - DVD can be scanned only in the case of the play 2 (playback without demultiplex).

### (14) Scan Out

1. Press [SCAN FWD] (10) key of the remote control unit in the tracking on condition.
2. Turn the shuttle of the remote control unit in the FWD direction (28 to 2A) in the tracking on condition.
  - DVD can be scanned only in the case of the play 2 (playback without demultiplex).

### (15) Loading In/Out

When pressing [SKIP REV] (53) key of the remote control unit in the open condition, it loads in the clamp direction. Then it loads in the open direction when pressing [SKIP FWD] (52) key.

- This function can practice only when it is indicated with "OPEN" in FL.

### (16) Tilt Neutral

Press [SPEED DOWN] (46) key of the remote control unit.

### (17) Tilt Servo On/Off

- a. On  
Press [SPEED UP] (47) key of the remote control unit.
- b. Off  
Press [SKIP REV] (53) key and [SKIP FWD] (52) key of the remote control unit at the tilt servo on or the tilt neutral.

### (18) Tilt Down

A manual moves in the going down direction when [SKIP REV] (53) key of the remote control unit is pressed during the play at the time of tilt off.

### (19) Tilt Up

A manual moves in the going up direction when [SKIP FWD] (52) key of the remote control unit is pressed during the play at the time of tilt off.

### (20) Focus Jump +

Focus jumps in 1 layer from 0 layer when [MULTI FWD] (58) key of the remote control unit is pressed. (DVD only)

### (21) Focus Jump -

Focus jumps in 0 layer from 1 layer when [MULTI REV] (55) key of the remote control unit is pressed. (DVD only)

### (22) The First And The Second Screen Switching

Every time [DISPLAY] (43) key of the remote control unit is pressed, the contents of the version indication part (the bottom right of the screen) change. (Refer to page 10.)

### (23) Screen Display On

1. Press [DISPLAY] (43) key of the remote control unit.
2. Display on/off switches every time [PROGRAM] (4C) key of the remote control unit is pressed.
  - When [DISPLAY] key is pressed in the display on, change the part number indication of the microprocessor and revision indication.
  - Initial state is screen display on and it becomes the part number indication of the microprocessor.

### (24) Screen Display Off

1. Press [AUDIO] (1E) key of the remote control unit.
2. Display on/off switches every time [PROGRAM] (4C) key of the remote control unit is pressed.

### (25) Background Color Switching

1. Change the background color (eight colors) prepared for in advance every time [2/R] (49) key of the remote control unit is pressed in order.  
[Blue→Green→Light blue→Red→Purple→Yellow→Gray→Black→Blue ...]
2. Change the background color (eight colors) prepared for in advance every time [1/L] (4B) key of the remote control unit is pressed in order.  
[Blue→Black→Gray→Yellow→Purple→Red→Light blue→Green→Blue ...]

### (26) Video Output Switching

1. It becomes component output when pressing [DIGITAL EFFECT] (5C) key of the remote control unit.
2. It becomes composite output when pressing [STILL WITH SOUND] (5B) key of the remote control unit.

## 2.4 EXPANSION FUNCTION 1

Set the reception mode of expansion function by pressing [TEST] (5E) key of the test mode remote control unit, then expansion function is able to execute by pressing the key of [0] to [9].

Indication for the most significant digit becomes "T" during the reception mode of expansion function. (This mode can on and off with toggle.)

### (1) LD On

Turn the laser diode to on by pressing [TEST] and [1] keys in order.

### (2) Focus On

Focus locks by pressing [TEST] and [2] keys in order.

### (3) Focus Sweep

Repeat focus sweep by pressing [TEST] and [3] keys in order.

### (4) Spindle FG Servo

Rising up the spindle and FG servo becomes on by pressing [TEST] and [5] keys in order.

### (5) AGC On/Off

Switch the AGC on and off with toggle by pressing [TEST] and [7] keys in order.

### (6) Jitter Value Indication.

It becomes the jitter-value indication mode by pressing [TEST] and [DIG/ANA] keys in order.

### (7) DSP coefficient indication of FTS system.

Set up the address (four digits) of the coefficient that it wants to see by the point of search address input, then real time indicates the coefficient in OSD by pressing [TEST] and [9] keys in order.

### (8) CD Error Rate Indication

Indicate the value in OSD after measuring is completed by pressing [TEST] and [0] keys in order after set up the measuring time (1 to 8 seconds) by the point of search address input.

## 2.5 EXPANSION FUNCTION 2

Set the reception mode of expansion function 2 by pressing [HILITE/INTRO] (55) key of the remote control unit, then expansion function 2 is able to execute by pressing the key of [0] to [9].

### (1) Forced DVD Setting

In the checker mode, set up the condition that DVD is attached forcibly except for the result of disc distinction by pressing [HILITE/INTRO] and [1] keys in order.

In the no checker mode (normal test mode), once execute the setting but abandon it soon.

Therefore, perform the disc distinction again for the safety when rising up the player in this condition.

### (2) Forced CD Setting

In the checker mode, set up the condition that CD is attached forcibly except for the result of disc distinction by pressing [HILITE/INTRO] and [3] keys in order.

In the no checker mode (normal test mode), once execute the setting but abandon it soon.

Therefore, perform the disc distinction again for the safety when rising up the player in this condition.

### (3) Execute The Disk Distinction

In the checker mode, execute the disc distinction result by pressing [HILITE/INTRO] and [0] keys in order.

## 2.6 List of Test Mode Function

Contents of Command	Condition	Key Name of Remote Control Unit	Mode of Remote Control Unit
Open	STOP	REPEAT A	A8-48
Close	OPEN	REPEAT A	A8-48
Stop	PLAY	REPEAT B	A8-44
Play (DVD is only tracing.)	STOP	TV/LDP	A8-0F
Play (DVD is with decode.)	STOP	PLAY	A8-17
Pause on	PLAY	CX	A8-0E
Pause on/off	PLAY/PAUSE	PAUSE	A8-18
Search address input (0 to 9) *Use for other numerical value input		0 to 9	A8-00 to 09

Contents of Command	Condition	Key Name of Remote Control Unit	Mode of Remote Control Unit
Search address input (A to F)	During address input	PGM+1 to 6	
①Search address clear ②Escape the search input mode	During address input Address = 0	CLEAR	A8-45
Change the search address input mode (Off→absolute address→addition→subtraction→Off) *Use for other numerical value input.		+10	A8-1F
Search execution (ignore the wrong address)		CHAP/TIME	A8-13
Tracking open	PLAY	STEP FWD	A8-54
Tracking close	PLAY	STEP REV	A8-50
Slider in	TR : Off	SCAN REV Shuttle REV	A8-11 A8-2C to 2F
Low speed scan REV	TR : On	SCAN REV	A8-11
Scan REV (Jump number is variable)	TR : On	Shuttle REV	A8-2C to 2F
Slider out	TR : Off	SCAN FWD Shuttle FWD	A8-10 A8-28 to 2B
Low speed scan FWD	TR : On	SCAN FWD	A8-10
Scan FWD (Jump number is variable)	TR : On	Shuttle FWD	A8-28 to 2B
Loading in	STOP	SKIP REV	A8-53
Loading out	STOP	SKIP FWD	A8-52
Tilt neutral		SPEED DOWN	A8-46
Tilt servo on		SPEED UP	A8-47
Tilt servo off	Tilt : On/N	SKIP REV SKIP FWD	A8-53 A8-52
Tilt up	PLAY	SKIP FWD	A8-52
Tilt down	PLAY	SKIP REV	A8-53
LD on		TEST + 1	A8-5E + A8-01
Focus on		TEST + 2	A8-5E + A8-02
Focus sweep		TEST + 3	A8-5E + A8-03
Focus jump +		MULTI FWD	A8-58
Focus jump -		MULTI REV	A8-55
Spindle FG on		TEST + 5	A8-5E + A8-05
AGC on/off	AGC : Off/On	TEST + 7	A8-5E + A8-07
Indication of the FTS coefficient	After the address four-digit input	TEST + 9	A8-5E + A8-09
CD error rate indication	PLAY	TEST + 0	A8-5E + A8-00
Jitter indication		TEST + DIG/ANA	A8-5E + A8-0C
Screen indication on/Switching of the first screen and second screen	OSD Off/On	DISPLAY	A8-43
Screen indication off	OSD : On	AUDIO	A8-1E
Screen indication on/off		PROGRAM	A8-4C
Switching of ID display methods (decimal/hexadecimal)		DIG/ANA	A8-0C
DISC type designation • Forced designation to DVD • Forced designation to CD • Request for Disk sensing	STOP	HILITE/INTRO +1 +3 +0	A8-5A +A8-01 +A8-03 +A8-00
Tray close of disk sense inhibition	Checker mode	REPEAT A	A8-48
Background color (eight colors) switching		2/R	A8-49
Background color (eight colors) switching (reverse toggle)		1/L	A8-4B
Video : component output		DIGITAL EFFECT	A8-5C
Video : composite output		STILL WITH SOUND	A8-5B

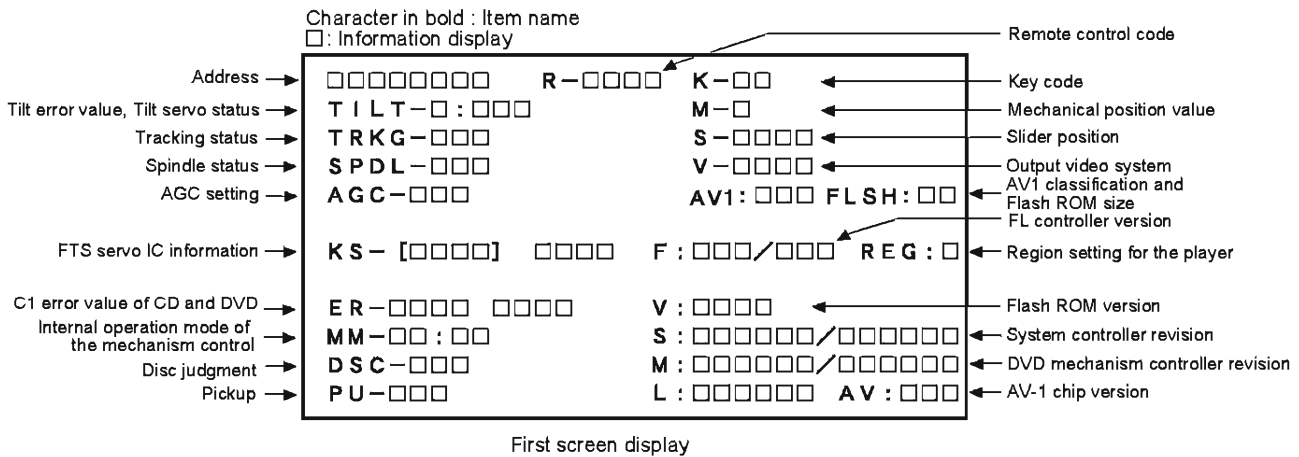
## ● Special Mention Item

- (1) Indications for the spindle status are as follows:  
 A/B : Spindle accelerator and brake  
 FG : FG servo  
 SRV : Rough, velocity/phase servo  
 O\_S : Offset addition, rough, velocity/phase servo
- (2) The movement of loading in/out starts from the tray open status. After that, this function is executed unless a play and close operation are done.
- (3) There are three methods for entering a search address:
  - ① Absolute address designation  
 → Searching for the address entered (indication for the most significant digit :>)
  - ② Additional input  
 → Searching for the address with the current ID number plus an entered number (indication for the most significant digit :+)
  - ③ Subtractive input  
 → Searching for the address with the current ID number minus an entered number (indication for the most significant digit :-)
 The above modes can be changed by pressing [10] key.  
 Note : A number for addition or subtraction must be entered in hexadecimal.
- (4) If you turn the power on while short-circuiting the short-circuit terminal at the side of the system controller, the player will forcibly enter the test mode. If the FL controller is set to Checker mode, disc sensing will not be started, even if a disc is loaded. Disc sensing will also not be performed if the tray is open/closed by your pressing [REPEAT A] key while in Checker mode. However, disc sensing will be started if the [OPEN/CLOSE] key on the player or on the remote control unit is pressed.
- (5) If disc-type designation is forcibly executed during a mode other than Checker mode, the system controller will abandon disc-type designation after setting the mechanism controller. Therefore, after startup of the player, disc sensing will be performed again for safety. If disc-type designation is forcibly executed during Checker mode, as disc-type designation is not abandoned, playback will be immediately started.
- (6) A background color change in order of blue → green → light blue → red → purple → yellow → gray → black → with the [2/R] key. It changes in order of gray → yellow → purple → red → light blue → green → blue → black → in the case of the [1/L] key.
- (7) In case of PD0260A\*, tilt servo on function may not move with DVD.

## 2.7 Test Mode Screen Display (The Second Generation)

Consecutive double-OSD display is supported during test mode. The screen is composed 10 lines with a maximum of 32 characters per line. It can't be used with the debugging display mode together.

### • Screen Composition

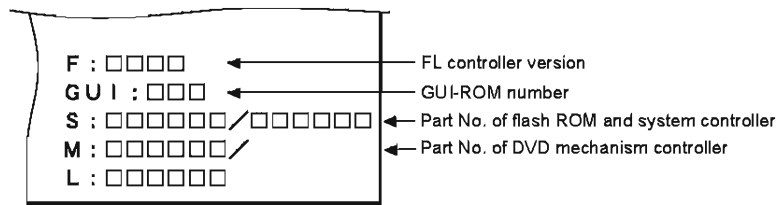


#### Caution :

The first screen and second screen switch by pressing [DISPLAY] key of the remote control unit.

It is only a version display part on the lower right of the screen those contents of display change.

ATB : ON/OFF information display and AGC manual establishment display deleted with the second generation.



Second screen display (at lower right portion of the screen)



## • Description of Each Item on the Display

### (1) Address indication

The address being traced is displayed in number.

DVD : ID indication (hexadecimal number, 8 digits) [\*\*\*\*\*]  
 CD : A-TIME (min. sec.) [0000\*\*\*\*]  
 (Note : For DVDs, decimal-number indication is possible.)

### (2) Code indication of the remote control unit [R-\*\*\*\*]

The code for the key pressed on the remote control unit, which is received by the FL controller, is displayed while the key is pressed. In the case of the double code, the second code will be displayed.

### (3) Key code indication for the main unit [K-\*\*]

The code for the key pressed on the main unit, which is received by the system controller, is displayed while the key is pressed.

### (4) Tilt error value, Tilt servo status [TILT-\*:\*\*\*\*]

Tilt error value : [0] to [F]  
 Tilt servo status :  
   Tilt neutral [N]  
   Tilt servo on [ON]  
   Tilt servo off [OFF]

### (5) Tracking status [TRKG-\*\*\*]

Tracking on [ON]  
 Tracking off [OFF]

### (6) Spindle status [SPDL-\*\*\*]

Spindle accelerator and brake [A/B]  
 FG servo [FG]  
 Rough, velocity phase servo [SRV]  
 Offset addition, rough, velocity phase servo [O\_S]

### (7) Mechanism position value [M-\*]

Position code [0] to [8]

### (8) Slider position [S-\*\*\*\*]

CD TOC area [IN ]  
 CD active area [CD ]  
 Side B inside [B IN]

### (9) AGC setting [AGC-\*\*]

AGC on [ON]  
 AGC off [OFF]

### (10) Output video system [V-\*\*\*\*]

NTSC system [NTSC]  
 PAL system [PAL ]  
 Auto-setting [AUTO]

### (11) FTS servo IC information

Indications for the following two types of information can be switched:

- ① DSP coefficient indication [KS-[\*\*\*\*] \*\*\*\*]  
 Displays the address (four digits) of the specified coefficient and the setting value (four digits) with [TEST] and [9] keys.
- ② Jitter value indication [JT-[0000]\*\*\*\*]  
 Displays the jitter value (four digits) with [TEST] and [DIG/ANA] keys.

### (12) Error rate indication

- ① C1 error value of CD [ER-C1 \*\*\*\* ]
- ② C1 error value of DVD [ER-\*\*\*\* \*\*\*\*]

### (13) Internal operation mode of mechanism controller [MM-\*\*:\*\*]

Internal mechanism mode (2 digits) and internal mechanism step (2 digits) of the mechanism controller

Note : For details, see the specifications of the mechanism controller.

### (14) Disk sensing [DSC-\*\*\*\*]

The type of discs loaded is displayed.  
 [DVD], [CD], [VCD], [ ]

### (15) Pickup [PU-\*\*\*]

The pickup being operating is displayed.  
 DVD [DVD]

### (16) Destination setting of the FL controller [F:\*\*\*/\*\*]

Three characters in front represent the type of model:  
 505: DV-P2E

Three characters that follow represent the destination code.  
 WY: /WY

### (17) Region setting of the player [REG:\*]

Setting value [1] to [6]

### (18) Version of the flash ROM [V:\*.\*\*]

### (19) Revision of the system controller [S:\*.\*\*/\*.\*\*]

- ① Revision number of the external ROM part (flash ROM) of the system controller <Front>
- ② Revision of the internal ROM part of the system controller <Rear>

## (20) Revision of the DVD mechanism controller

[M:\*.\*\*\*/\*.\*\*\*]

- ① Revision number of the external ROM part (flash ROM) of the DVD mechanism controller <Front>
- ② Revision of the internal ROM (core part) of the DVD mechanism controller <Rear>

## (21) Version of the AV-1 chip [AV:\*.]\*

## (22) Version of the FL controller [F:\*.]\*

## (23) Control number of the GUI-ROM [GUI:\*\*\*]

## (24) The part number of the flash ROM and system controller [S : \*\*\*/\*\*]

- ① Part number of the flash ROM <Front>  
(Example) VYW1602-A → W1602A  
(Example) PD626A9 → 6256A9
- ② Part number of the system controller <Rear>  
(Example) PD3381T1 → 3381T1

## (25) Part number of the DVD mechanism controller

(Example) PD4889A0 → 4889A0

## (26) AV1 classification [AV1 : \*\*\*]

RAM, E/A, S/C

## (27) Flash ROM size [FLSH : \*\*]

8M : 8M bit, 4M : 4M bit

## 2.8 DESCRIPTIONS OF NEW FUNCTIONS IN TEST MODE

### 2.8.1 Error Rate

#### ● Overview

The error rate of CDs can be measured and the value is displayed in decimal and indicates the number of C1 errors (including the corrected ones) counted during the specified measurement time.

An indeterminate measurement result may be caused by a dirty disc, decentering, surface deflection, birefringence (double reflection), or a pickup problem (dirty lens, etc.), misadjustments of the pickup, improper automatic adjustment, or incomplete adjustments. On the manufacturing line, the value is used for yes/no decision of pickups. Normally, for a measurement for 5 seconds, the value may be less than 10 with a clean disc and less than 100 with a disc with some damage.

#### ● Using the Function in Test Mode (The Remote Control Keys to be Used are Indicated in Brackets)

- (1) Set the CD to trace (playback) state.
- (2) Set the player to Number input mode by pressing [+10] and enter the measurement time in a range of 1 to 5 (sec.).
- (3) Start measurement by pressing [TEST] + [0]. The SubQ counter stops during measurement, but this is not a malfunction. When the specified measurement time has elapsed, the result is indicated to the right of "ER C1 -" on the screen.  
If you skip step 2, the measurement time is set to 5 (sec).

### 2.8.2 Jitter Value

#### ● Overview

The jitter values of DVDs and CDs, which show a voltage in three-digit decimal as  $\text{○○○V}$ , can be displayed. For example, the indication "0278" means 2.78 V. The larger the value, the worse the jitter. The worst value is 3.25 V. When playing a DVD or a video CD with which the jitter value is extremely high, mosaics may be seen. As with the error rate, the jitter depends on the disc and pickup. The jitter value to be displayed has no close correlation with a jitter measuring device, and is to be regarded just for reference.

Reference : When the jitter value is 2.9 V or more with a DVD, or 3.0 V or more with a CD (or a video CD), it may cause a problem (mosaic, audio distortion, etc.) in playback.

#### ● Using the Function in Test Mode (The Remote Control Keys to be Used are Indicated in Brackets)

- (1) Set the DVD or CD to trace (playback) state with AGC OFF.
- (2) Press [TEST] and [DIGITAL/ANALOG].  
The current jitter value appears to the right of "JT:○○○○" on the display. The jitter value keeps changing unless any additional key operation is made.

Note : Although a value may be displayed on the screen even with AGC ON, this is NOT a jitter value.

The jitter value with AFB ON cannot be displayed (see the next section). The jitter value with AFB ON can be obtained only by directly measuring the voltage at the JV connector (pin 94) of the servo DSP (LC78650).

### 2.8.3 Startup Sequence

The basic flow is shown below.

- (1) Closes the tray.
- (2) Detects the peak.
- (3) Distinguishes the disc.
- (4) SGC
- (5) Turns on the focus servo.
- (6) Starts the spindle rotation.
- (7) ATB
- (8) Measures the MIRR modulation degree.
- (9) Turns on the tracking servo.
- (10) Turns on the slider servo.
- (11) Turns on the spindle servo.
- (12) Focus AGC
- (13) Tracking AGC
- (14) AFB
- (15) Plays AGC (for CDs)
- (16) Plays back.

- \* For a 2-layer DVD, steps (7) through (14) are repeated for each layer.
- \* When starting up with [TV/LDP] in Test mode, all the steps (1) to (16) are performed for a DVD, and steps (1) to (8) are performed for a CD.

### 2.8.4 Peak Detection

#### ● Overview

This is a new function to measure the size and location of the sine wave related to focus errors at the beginning. The measurement is performed in the normal startup process and in Test mode, as well. If the sine wave is small, the OE IC gain is switched. Only the judgment for NO DISC is accomplished at this time. The operation is in effect as for judgment for DISC.

#### ● Using the Function in Test Mode

This function is not assigned to any remote control keys. Only an open/close operation can trigger the function.

### 2.8.5 Disc Distinction

#### ● Overview

This function is almost the same as that with the first-generation models. The only difference is as follows: If an error occurs in the startup sequence and playback cannot be started, startup is retried after forcibly switching the disc distinction from DVD to CD or vice versa by a backup process. If startup fails again, it is canceled, and an error is generated. The types of error that triggers the backup process for disc distinction are discussed in the next section.

#### ● Using the Function in Test Mode

This function is not assigned to any remote control keys. Only an open/close operation can trigger the function.

### 2.8.6 SGC

#### ● Overview

This is a new function to maintain the sine wave related to focus errors to a certain size so that the sine wave shows 1.8 V for the P-to-P value.

This operation is performed each time after judging disc presence and distinction in the normal startup process and in Test mode, as well. The operation is achieved by switching the FE gain inside the RF IC (LA9700) by using the voltage at the SGC connector (pin 22) of the RF IC.

#### ● Using the Function in Test Mode

This function is not assigned to any remote control keys. Only an open/close operation can trigger the function.

### 2.8.7 Measurement of MIRR Modulation Degree

#### ● Overview

The slice voltage of the RF signal is measured and used in the calculation to generate the MIRR signal. This operation is made in synchronization with ATB ON/OFF in normal startup and in Test mode, as well.

### 2.8.8 AFB (Auto Focus Bias) Function

#### ● Overview

This function supports DVDs as well as CDs. The operation is executed only once (once for each layer for a 2-layer DVD) after the focus and tracking AGC at startup. The operation is accomplished not by centering the focus servo to Vref (2.5 V), but by gradually changing the center value for the optimum jitter value. Thus, performance with an improper or dirty disc (by fingerprints, etc.), or the temperature characteristics (at 0°C, 35°C, etc.) will be improved.

#### ● Overview Using the Function in Test mode (the Remote Control Keys to be Used are Indicated in Brackets)

As the function is to be synchronized with AGC, turn on and off AFB by pressing [TEST] + [7]. The jitter value measurement cannot be made with AFB ON.

## 2.8.9 PLAY AGC

### ● Overview

The SGC voltage is adjusted during playback according to the RF signal level. (For details on SGC, see section 2.8.6.)

Only for CDs, this adjustment is made only once immediately after AFB during startup. In Test mode, it synchronizes with AGC ON/OFF. The operation is achieved through adjustment in the Servo DSP (LC78650), and the SGC voltage is output via AUX0 (pin 44).

### ● Using the Function in Test Mode (the Remote Control Keys to be Used are Indicated in Brackets)

As the function is to be synchronized with AGC, turn on and off AFB by pressing [TEST] + [7].

## 2.9 Additional Descriptions of Error Generation

This section describes the major errors of the mechanism-control computer.

### (1) DISC Distinction Error (Error 38)

The most common error. The tracking overcurrent error (Error c3), Defocus error (Error 33), spindle errors (Errors 41 to 4b), auto sequence errors (Errors 51 to 55) and code misread errors (71 to 74) often lead to this error.

### (2) Search Errors (Errors 11, 12, 19)

Almost all cases where playback suddenly stops may involve these errors. They may be generated because of defects on the disc. As with the code misread errors below, they can also be generated by a dirty disc or bad jitters.

### (3) Code Misread Errors (Errors 71 to 74)

Almost all cases where the inserted disc does not start or immediately stops playing may involve these errors. They may be generated because of a dirty disc or bad jitters. A bad jitter may be caused by a dirty disc, decentering, surface deflection, birefringence (double reflection), or a pickup problem (dirty lens, etc.), misadjustments of the pickup, improper automatic adjustment, or incomplete adjustments.

### (4) Spindle Errors (Errors 48, 49)

An FG transition timeout (Error 48) may be generated because of instability of the FG signal or unavailability of spindle drive voltage. A PLL transition timeout (Error 49) can be generated with a dirty disc.

### (5) Automatic Sequence Errors (Errors 51 to 55)

If any automatic sequence (auto execution command) of the servo DSP is not completed, these errors are generated. The causes differ among error numbers. They may be caused by abnormalities in the communication line between the mechanism-control computer (PD4889A) and the servo DSP or instability of the XABUSY connector (pin 38) of the mechanism-control computer.

### (6) DSP Communication Errors (Errors a1 to a6)

These errors will be generated if the mechanism-control computer cannot properly communicate with the servo DSP. They may be caused by instability of the XCBUSY connector (pin 8) of the mechanism-control computer, instability of the communication line between the mechanism-control computer and the servo DSP, or a defect in the servo DSP.

### (7) DVD Block Noise, etc.

Block noise and momentary picture freeze (\*) with a DVD are not regarded as errors, but the causes of these symptoms in the Servo system may be:

- (1) A search takes a long time (leading to a search error if it worsens).
- (2) Codes cannot be read clearly (leading to a code misread error if it worsens).

If the value to the right in the "ER: ○:○e-" indication displayed on the screen by pressing the ESC and DISP keys of the remote control in Test mode is greater than 5, the cause may be (1). If the value is less than 3, the cause may be (2).

- (\*) With a specific 2-layer disc with which playback continues from layer 1 to 2 or vice versa, the picture may be seen momentarily stop. This may be attributed to the performance of the player. Players of other manufacturers have the same symptoms to varying degrees.

### 3. IC INFORMATION

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

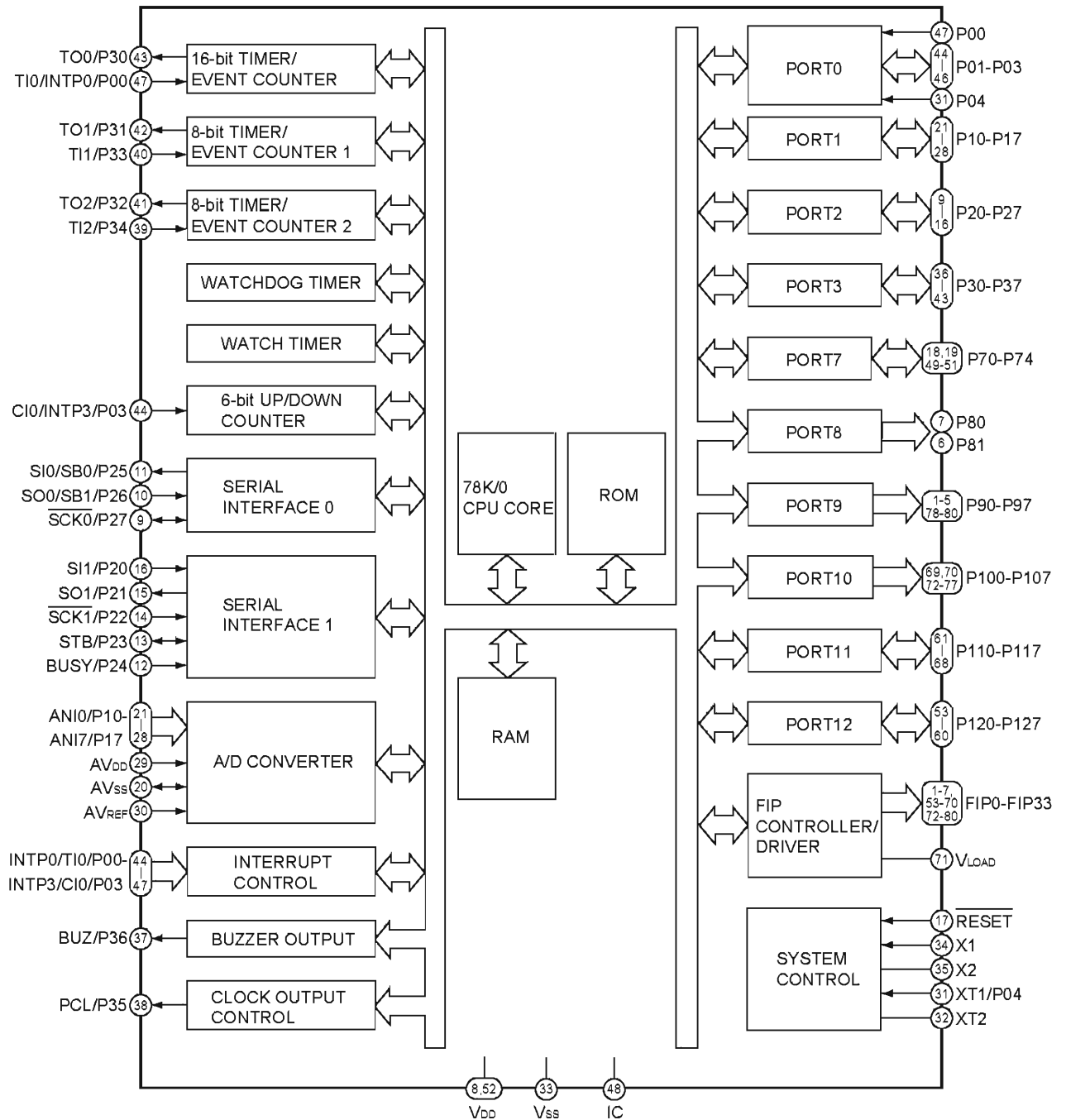
• **List of IC**

PD4890A, PD0260A2, PD0261A2, LA9700M, BA6195FP, LC78650E-P, PD4889A, SRM2B256SLMX70, VYW1536, PD3381A, MB86371, MB811171622A-100FN, CY2081SL-611, PD2058A

■ **PD4890A (FLKB ASSY : IC101)**

• **Mode Control IC**

• **Block Diagram**



● Pin Function

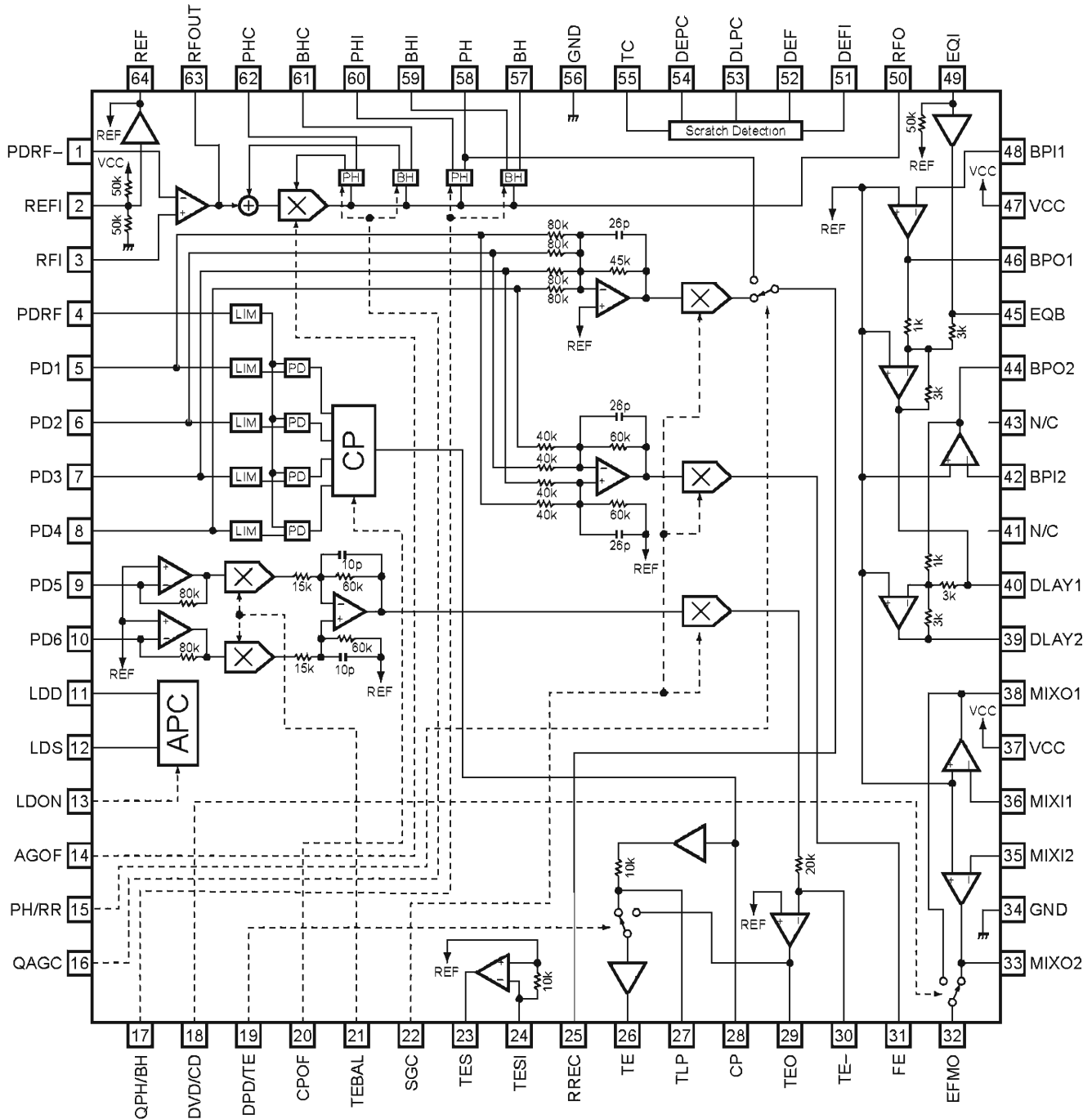
No.	Mark	Pin Name	I/O	Function
1	P94	G7	O	FL timing output H : ON
2	P93	G6		
3	P92	G5		
4	P91	G4		
5	P90	G3		
6	P81	G2		
7	P80	G1		
8	VDD	VCC	-	Power supply pin
9	P27	(NC)	O	Not used
10	P26	(NC)		
11	P25	(NC)		
12	P24	LAMP	O	DVD lamp ON/OFF H : ON
13	P23	XREADY	O	Communication handshake line with the system controller L : Permit the communication
14	P22	SCK	I/O	Communication clock output with the system controller
15	P21	SO	I/O	Communication data output with the system controller
16	P20	SI	I	Communication data input with the system controller
17	RESET	RESET IN	I	Reset input L : reset
18	P74	(NC)	O	Not used
19	P73	(NC)	O	Not used
20	AVss	Vss	-	GND pin
21	P17	POWER ON	O	SW 5V ON/OFF H : ON
22	P16	RESET OUT	O	System reset output L : reset
23	P15	(NC)	O	Not used
24	P14	(NC)		
25	P13	KIN1	I	Key input
26	P12	KIN0		
27	P11	MS1	I	Destination judgement input
28	P10	MS0		
29	AVDD	AVDD	-	Power supply pin
30	AVREF	AVREF	-	Reference voltage
31	P04	P04	I	Not used
32	XT2	(NC)	-	Not used
33	VSS	VSS	-	GND pin
34	X1	X1	I	Connect a microprocessor clock
35	X2	X2	-	
36	P37	(NC)	O	Not used
37	P36	(NC)		
38	P35	(NC)		
39	P34	P34	I	Not used
40	P33	P33		

No.	Mark	Pin Name	I/O	Function
41	P32	P32	I	Not used
42	P31	P31		
43	P30	(NC)		
44	P03	P03	I	Not used
45	P02	ON POWER	I	Switch the STBY/POWER ON at rising edge the FL controller L : STBY
46	P01	LT	I	Communication handshake line with the system controller H : Permit the communication
47	P00	SEL IR	I	Remote control signal input
48	IC	IC	-	---
49	P72	(NC)	O	Not used
50	P71	FL OFF LED	O	FL OFF LED ON/OFF L : ON
51	P70	(NC)	O	Not used
52	VDD	VDD	-	Power supply pin
53	P127	(NC)	O	Not used
54	P126	(NC)	O	Not used
55	P125	(NC)		
56	P124	(NC)		
57	P123	(NC)		
58	P122	(NC)		
59	P121	(NC)		
60	P120	(NC)		
61	P117	P15	O	FL segment output H : ON
62	P116	P14		
63	P115	P13		
64	P114	P12		
65	P113	P11		
66	P112	P10		
67	P111	P9		
68	P110	P8		
69	P107	P7		
70	P106	P6		
71	VLOAD	-27V	-	- 27V input H : ON
72	P105	P5	O	FL segment output H : ON
73	P104	P4		
74	P103	P3		
75	P102	P2		
76	P101	P1		
77	P100	G11	O	FL timing output H : ON
78	P97	G10		
79	P96	G9		
80	P95	G8		

# LA9700M (DVDM ASSY : IC101)

• RF IC

## • Block Diagram

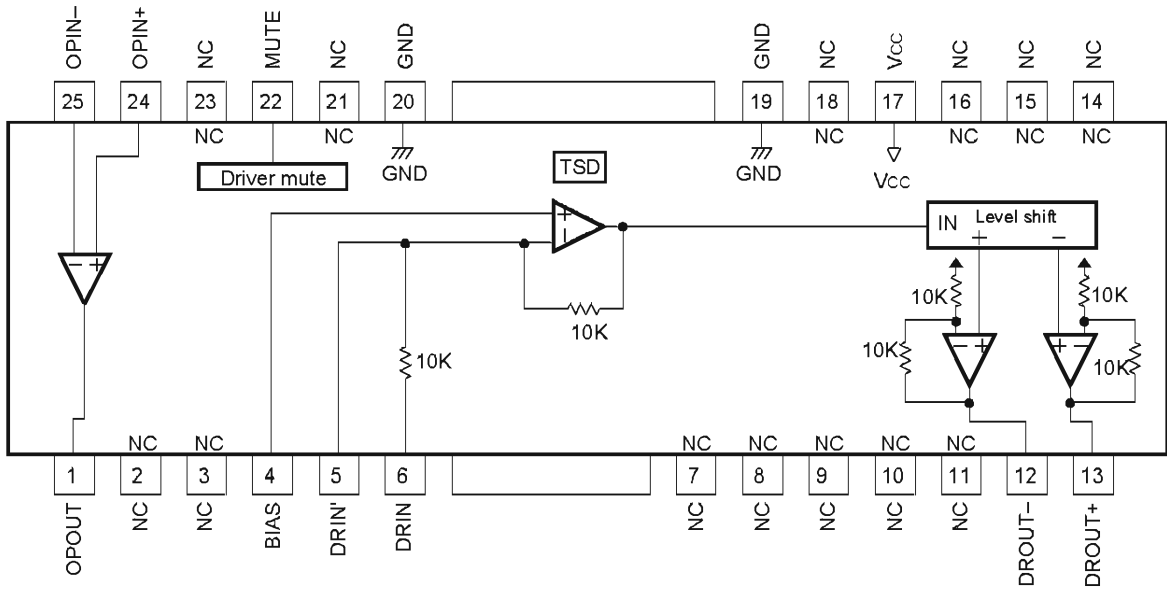




## BA6195FP (DVDM ASSY : IC161)

### • Spindle Driver

#### • Block Diagram



#### • Pin Function

No.	Pin Name	Function	No.	Pin Name	Function
1	OPOUT	OP amp. output pin	14	N.C.	Non Connection
2	N.C.	Non Connection	15	N.C.	
3	N.C.		16	N.C.	
4	BIAS		Bias pin	17	VCC
5	DRIN'	Driver gain adjustment pin	18	N.C.	Non Connection
6	DRIN	Driver gain input pin	19	GND	Sub-strait GND pin
7	N.C.	Non Connection	20	GND	
8	N.C.				
9	N.C.				
10	N.C.				
11	N.C.				
12	DROUT -	Driver negative output pin (for input)	21	N.C.	Non Connection
13	DROUT +	Driver positive output pin (for input)	22	MUTE	Mute pin
			23	N.C.	Non Connection
			24	OPIN +	OP amp. non-inverting input pin
			25	OPIN -	OP amp. inverting input pin

## ■ PD4889A (DVDM ASSY : IC501)

### • Mechanism Control IC

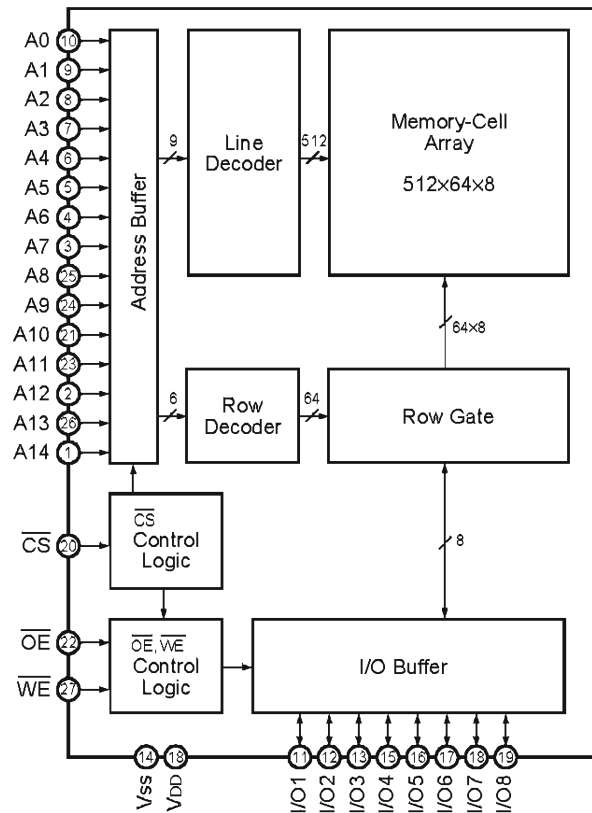
#### ● Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	LODDR	I/O	Loading motor drive output	33	XDSPRST	-	Reset pulse for servo DSP "L"
2	DVD/XCD	O	Clock switch H : DVD , L : CD	34	ASTB	O	Address strobe of multiplexed address/data bus "H"
3	AGOFF	O	Turn AGC of RF IC to OFF for "H"	35	XRST	I	CPU reset input "L"
4	EFLG	I	Count data input of error rate Measureable by using timer 1 and 2.	36	SBSY	INT	Subcode frame sync. input (H : S0+S1 period)
5	FSX	I	Error rate count area input (EFM frame sync.) H : C1 , L : C2	37	SHAKE	INT	Not used
6	P35/PCL	-	Not used (pull down)	38	XABUSY	INT	DSP auto sequence busy input "L"
7	XTOFF	I/O	High impedance (input) at DEFECT ON "L" output at DEFECT OFF	39	XIRQ2	INT	LSI-11 interrupt input "L"
8	XCBUSY	I	DVD command reception is possible "L"	40	VDD	-	Power supply pin
9	VSS	-	GND	41	X2	-	Connect a ceramic resonator
10	MAD0	I/O	External address / data bus	42	X1	-	
11	MAD1			43	IC (Vpp)	-	GND
12	MAD2			44	XT2	-	Not used
13	MAD3			45	DVDPPK	I	Not used
14	MAD4			46	AVss	-	GND
15	MAD5			47	LODPOS	I	Loading and clamp position SW input
16	MAD6			48	SLDPOS	I	Slider position SW input
17	MAD7			49	DORPOS	I	Not used
18	MA8	O	External address bus	50	XCURDET	I	Acuator over-current detection input (former TRDLMT) "L" Servo OFF for 300 ms.
19	MA9			51	DR/XLD	O	Not used
20	MA10			52	MON	O	Spindle motor ON output "H"
21	MA11			53	XCD2X	O	Not used
22	MA12			54	OEICG	O	"H" : OEIC gain up to 6dB
23	MA13			55	AVDD	-	Power supply pin
24	VSS	-	GND	56	AVREF	-	Reference power supply pin
25	MA14	O	External address bus	57	P_ERR	O	Not used
26	MA15			58	P21/SO1	-	Not used (pull down)
27	DRF	I	(FOK) Focus OK input	59	P22/XSK1	-	Not used (pull down)
28	V_PB	I	(LOCK) EFM servo lock signal "H"/"L" = rough servo / phase servo	60	XCSB	O	DSP parallel command setting output "L"
29	P62	-	Not used (pull down)	61	CLD	O	Not used
30	WRQ	I	Readable flag of subcode Q	62	LDSO	I	Not used
31	XRD	O	CPU read pulse "L"	63	LDSI	O	Not used
32	XWR	O	CPU write pulse "L"	64	LDSCK	I	Not used

## SRM2B256SLMX70 (DVD M ASSY : IC502)

• 256 K SRAM (For Mechanism Control IC)

### • Block Diagram



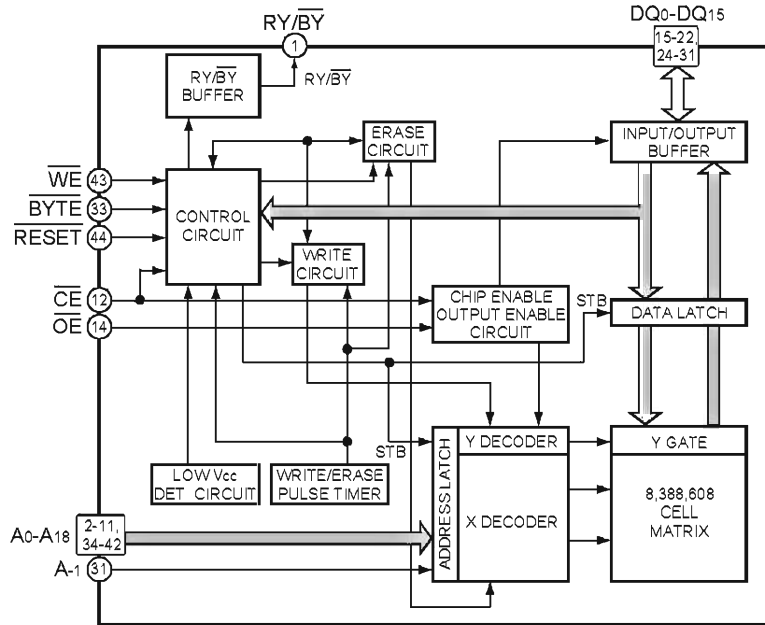
### • Pin Function

No.	Pin Name	Function	No.	Pin Name	Function
1	A14	Address input	15	I/O4	Data input/output
2	A12		16	I/O5	
3	A7		17	I/O6	
4	A6		18	I/O7	
5	A5		19	I/O8	
6	A4		20	$\overline{\text{CS}}$	Chip select
7	A3		21	A10	Address input
8	A2		22	$\overline{\text{OE}}$	Output enable
9	A1		23	A11	Address input
10	A0		24	A9	
11	I/O1	25	A8		
12	I/O2	Data input/output	26	A13	Write enable
13	I/O3		27	$\overline{\text{WE}}$	
14	VSS	GND (0V)	28	VDD	Power supply (2.7 to 5.5V)

## ■ VYW1602 (DVDM ASSY : IC603)

• Flash ROM

### ● Block Diagram



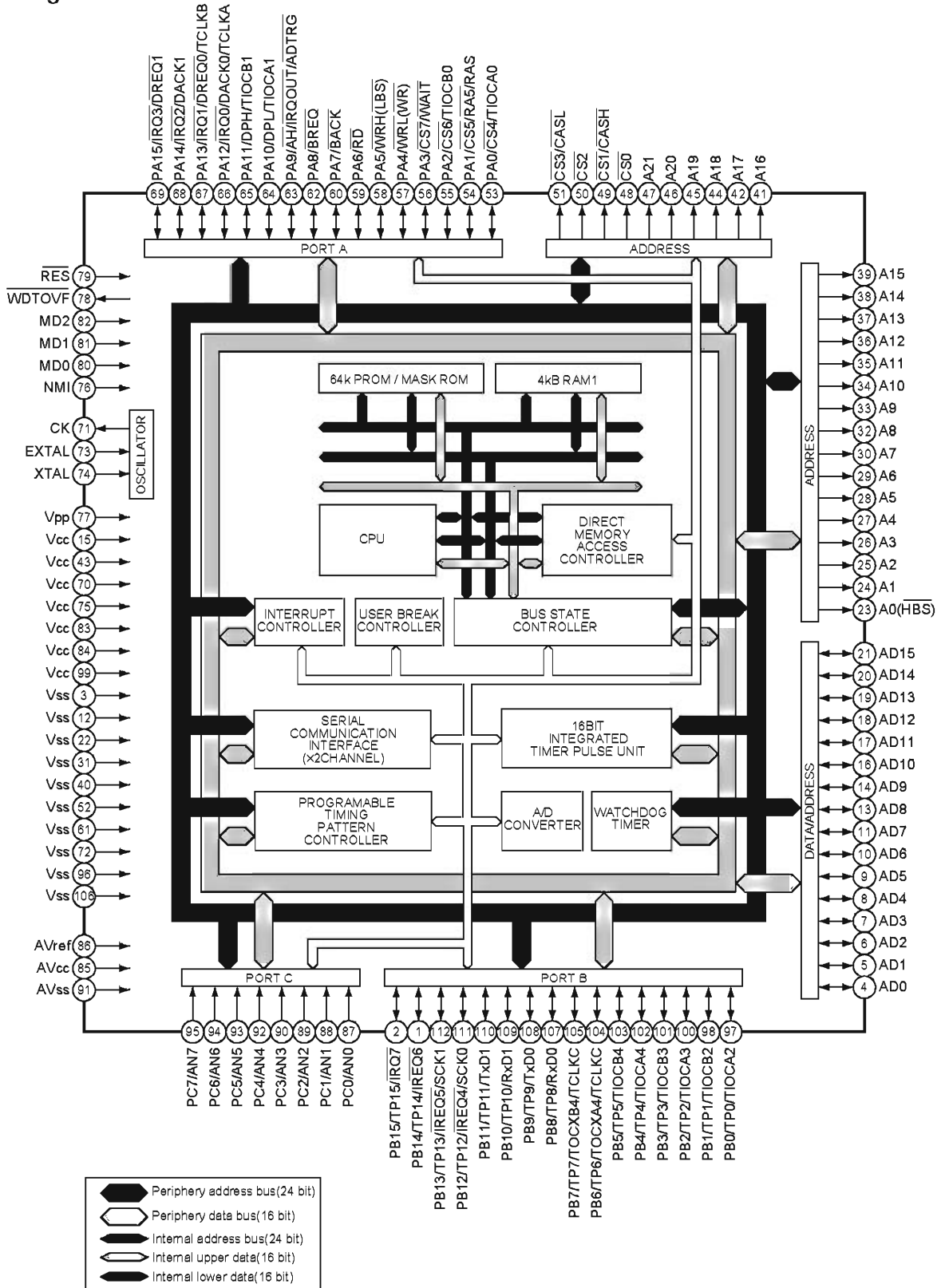
### ● Pin Function

No.	Pin Name	Function	No.	Pin Name	Function
1	RY/BY	Ready / Busy output	23	VCC	Power supply (+5.0V ± 10% or ± 5%)
2	A18	Address input	24	DQ4	Data input / output
3	A17				
4	A7				
5	A6				
6	A5				
7	A4				
8	A3				
9	A2				
10	A1				
11	A0				
12	CE		Chip enable	31	DQ15/A-1
13	VSS	Ground	32	VSS	Ground
14	OE	Output enable	33	BYTE	Switch the 8 bit and 16 bit modes
15	DQ0	Data input/output	34	A16	Address input
16	DQ8				
17	DQ1				
18	DQ9				
19	DQ2				
20	DQ10				
21	DQ3				
22	DQ11				
			35	A15	
			36	A14	
			37	A13	
			38	A12	
			39	A11	
			40	A10	
			41	A9	
			42	A8	
			43	WE	Write enable
			44	RESET	Hardware reset

# ■ PD3381A (DVDM ASSY : IC601)

• System Control CPU

• Block Diagram



● Pin Function

No.	Pin Name	I/O	Function
1	PB14/TP14/ $\overline{\text{IRQ6}}$	I/O	16 bit input/output (port B) / Timing pattern output / Interruption request
2	PB15/TP15/ $\overline{\text{IRQ7}}$		
3	VSS	I	Ground
4	AD0	I/O	16 bit bilateral data bus
5	AD1		
6	AD2		
7	AD3		
8	AD4		
9	AD5		
10	AD6		
11	AD7		
12	VSS	I	Ground
13	AD8	I/O	16 bit bilateral data bus
14	AD9		
15	VCC	I	Power supply
16	AD10	I/O	16 bit bilateral data bus
17	AD11		
18	AD12		
19	AD13		
20	AD14		
21	AD15		
22	VSS	I	Ground
23	A0 (HBS)	O	Address bus output (upper byte strobe signal)
24	A1	O	Address bus output
25	A2		
26	A3		
27	A4		
28	A5		
29	A6		
30	A7		
31	VSS	I	Ground
32	A8	O	Address bus output
33	A9		
34	A10		
35	A11		
36	A12		
37	A13		
38	A14		
39	A15		
40	VSS	I	Ground
41	A16	O	Address bus output
42	A17		
43	VCC	I	Power supply

No.	Pin Name	I/O	Function
44	A18	O	Address bus output
45	A19		
46	A20		
47	A21		
48	$\overline{CS0}$	O	Chip select signal
49	$\overline{CS1}/\overline{CASH}$	O	Chip select signal / Column address strobe timing signal on the upper side of DRAM
50	$\overline{CS2}$	O	Chip select signal
51	$\overline{CS3}/\overline{CASL}$	O	Chip select signal / Column address strobe timing signal on the lower side of DRAM
52	VSS	I	Ground
53	PA0/ $\overline{CS4}/\overline{TIOCA0}$	I/O	16 bit input/output (port A) / Chip select signal / ITU input capture input/ITU output compare output (channel 0)
54	PA1/ $\overline{CS5}/\overline{RAS}$	I/O	16 bit input/output (port A) / Chip select signal / Low address strobe timing signal of DRAM
55	PA2/ $\overline{CS6}/\overline{TIOCB0}$	I/O	16 bit input/output (port A) / Chip select signal / ITU input capture input/ITU output compare output (channel 0)
56	PA3/ $\overline{CS7}/\overline{WAIT}$	I/O	16 bit input/output (port A) / Chip select signal / Wait input for bus cycle
57	PA4/ $\overline{WRL}$ ( $\overline{WR}$ )	I/O	16 bit input/output (port A) / External lower 8 bit writing (output at writing)
58	PA5/ $\overline{WRH}$ ( $\overline{LBS}$ )	I/O	16 bit input/output (port A) / External upper 8 bit writing (lower byte strobe signal)
59	PA6/ $\overline{RD}$	I/O	16 bit input/output (port A) / External reading out
60	PA7/ $\overline{BACK}$	I/O	16 bit input/output (port A) / Bus claim request acknowledge
61	VSS	I	Ground
62	PA8/ $\overline{BREQ}$	I/O	16 bit input/output (port A) / Bus claim request
63	PA9/ $\overline{AH}/\overline{IRQOUT}/\overline{ADTRG}$	I/O	16 bit input/output (port A) / Address hold timing signal / Interruption request output at slave / A/D conversion trigger input
64	PA10/ $\overline{DPL}/\overline{TIOCA1}$	I/O	16 bit input/output (port A) / Data bus parity on the lower side / ITU input capture input/ITU output compare output (channel 1)
65	PA11/ $\overline{DPH}/\overline{TIOCB1}$	I/O	16 bit input/output (port A) / Data bus parity on the upper side / ITU input capture input/ITU output compare output (channel 1)
66	PA12/ $\overline{IRQ0}/\overline{DACK0}/\overline{TCLKA}$	I/O	16 bit input/output (port A) / Interruption request / DMA transfer request reception (channel 0) / ITU timer clock input
67	PA13/ $\overline{IRQ1}/\overline{DREQ0}/\overline{TCLKB}$	I/O	16 bit input/output (port A) / Interruption request / DMA transfer request (channel 0) / ITU timer clock input
68	PA14/ $\overline{IRQ2}/\overline{DACK1}$	I/O	16 bit input/output (port A) / Interruption request / DMA transfer request reception (channel 1)
69	PA15/ $\overline{IRQ3}/\overline{DREQ1}$	I/O	16 bit input/output (port A) / Interruption request / DMA transfer request (channel 1)
70	VCC	I	Power supply
71	CK	O	System clock output
72	VSS	I	Ground
73	EXTAL	I	Crystal oscillator input      External clock input
74	XTAL	I	Crystal oscillator input
75	VCC	I	Power supply
76	NMI	I	Non-maskable interruption input
77	VPP	I	Power supply of PROM program
78	$\overline{WDTOVF}$	O	Watchdog timer over-flow output
79	$\overline{RES}$	I	Reset input
80	MD0	I	Mode setting pins
81	MD1		
82	MD2		
83	VCC	I	Power supply
84	VCC		

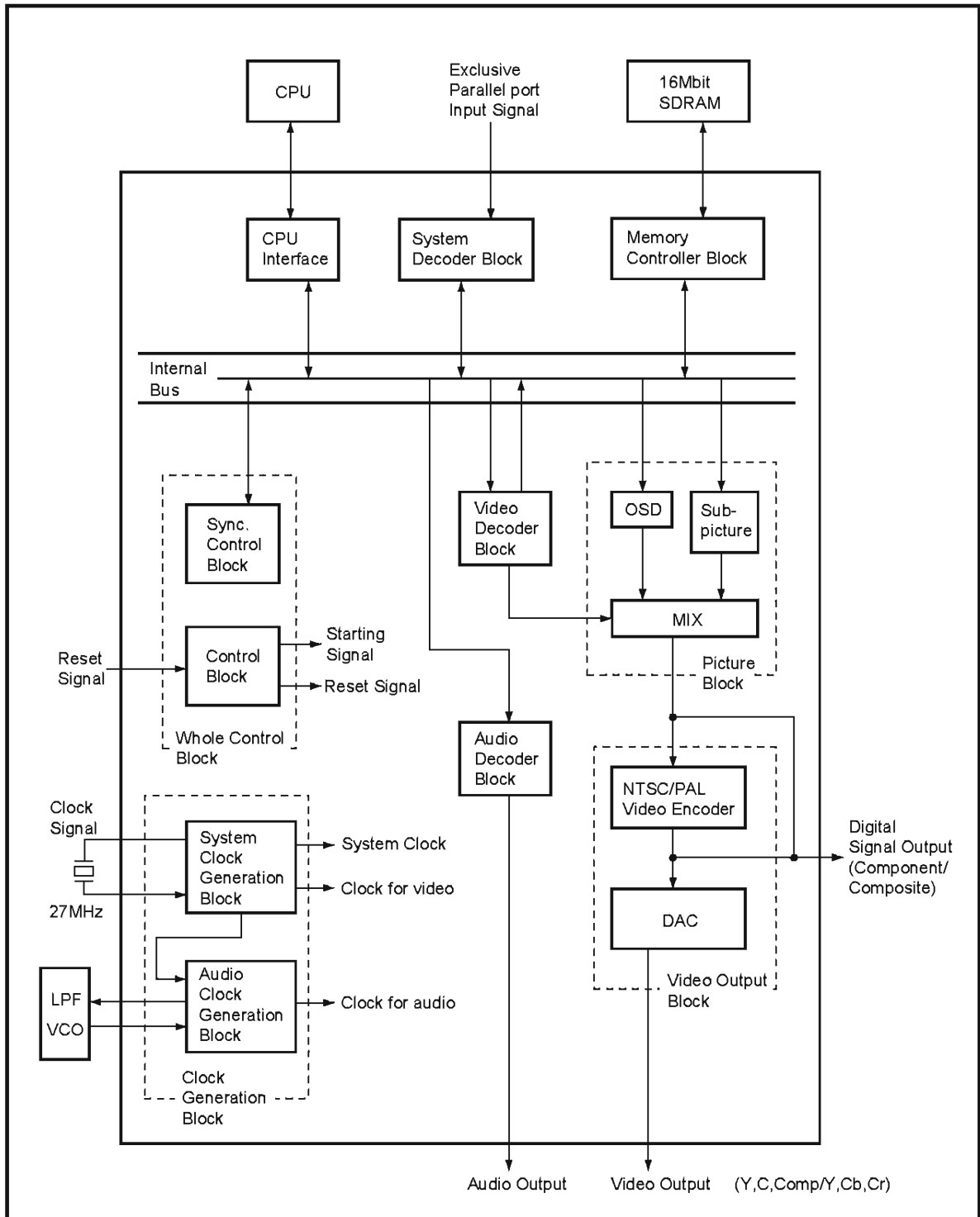
No.	Pin Name	I/O	Function
85	AVCC	I	Analog power supply
86	AVREF	I	Analog reference power supply
87	PC0/AN0	I	8 bit input (port C) / Analog signal input
88	PC1/AN1		
89	PC2/AN2		
90	PC3/AN3		
91	AVSS	I	Analog Ground
92	PC4/AN4	I	8 bit input (port C) / Analog signal input
93	PC5/AN5		
94	PC6/AN6		
95	PC7/AN7		
96	VSS	I	Ground
97	PB0/TP0/TIOCA2	I/O	16 bit input/output (port B) / Timing pattern output / ITU input capture input/ITU output compare output (channel 2)
98	PB1/TP1/TIOCB2		
99	VCC	I	Power supply
100	PB2/TP2/TIOCA3	I/O	16 bit input/output (port B) / Timing pattern output / ITU input capture input/ITU output compare output (channel 3)
101	PB3/TP3/TIOCB3		
102	PB4/TP4/TIOCA4	I/O	16 bit input/output (port B) / Timing pattern output / ITU input capture input/ITU output compare output (channel 4)
103	PB5/TP5/TIOCB4		
104	PB6/TP6/TOCXA4/TCLKC	I/O	16 bit input/output (port B) / Timing pattern output / ITU output compare output (channel 4) / ITU timer clock input
105	PB7/TP7/TOCXB4/TCLKD		
106	VSS	I	Ground
107	PB8/TP8/RXD0	I/O	16 bit input/output (port B) / Timing pattern output / Receive data input (channel 0)
108	PB9/TP9/TXD0	I/O	16 bit input/output (port B) / Timing pattern output / Transmission data output (channel 0)
109	PB10/TP10/RXD1	I/O	16 bit input/output (port B) / Timing pattern output / Receive data input (channel 1)
110	PB11/TP11/TXD1	I/O	16 bit input/output (port B) / Timing pattern output / Transmission data output (channel 1)
111	PB12/TP12/ $\overline{\text{IRQ4}}$ /SCK0	I/O	16 bit input/output (port B) / Timing pattern output / Interruption request / Serial clock input/output (channel 0)
112	PB13/TP13/ $\overline{\text{IRQ5}}$ /SCK1	I/O	16 bit input/output (port B) / Timing pattern output / Interruption request / Serial clock input/output (channel 1)



# ■ MB86371 (DVDM ASSY : IC801)

• MPEG2 Decoder LSI For DVD

## ● Block Diagram



● Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function	
1	CLKSEL	I	ON/OFF signal of PLL ("H" : ON, "L" : OFF)	27	VDD	-	3.3V power supply	
2	DIGCPN7	O	Digital component signal output (MSB) Digital Y signal output (9-bit) (MSB)	28	DIGCOMP4	O	Digital composite signal output Digital C signal output	
3	VSS	-	GND	29	DIGCOMP3			
4	DIGCPN6	O	Digital component signal output Digital Y signal output (9-bit)	30	DIGCOMP2			
5	DIGCPN5			31	DIGCOMP1			
6	DIGCPN4			32	DIGCOMP0			Digital composite signal output (LSB) Digital C signal output (LSB)
7	DIGCPN3			33	DACK			O
8	DIGCPN2			34	N.C.	-	Non connection	
9	DIGCPN1			35	VSSA3	-	GND (D/A converter)	
10	VDD	-	3.3V power supply	36	ANAC	O	Analog color (C) output signal	
11	DIGCPN0	O	Digital component signal output (LSB) Digital Y signal output (9-bit) (LSB)	37	VDDA3	-	3.3V power supply (for built-in D/A converter only)	
12	RBSEL	O	Cb and Cr discrimination signal at the digital component signal output. LSB at the digital Y signal output.	38	VSSA2	-	GND (D/A converter)	
13	XHS	O	Horizontal sync. output signal	39	ANAY	O	Analog luminance (Y) output signal	
14	XVS	O	Vertical sync. output signal	40	VDDA2	-	3.3V power supply (for built-in D/A converter only)	
15	VSS	-	GND	41	VREF	I	Reference voltage for D/A converter	
16	XRESET	I	LSI reset signal	42	VRO	O	Internal current setting pin of D/A converter	
17	XLDCSYNC	I	External sync. signal input (LD mode)	43	N.C.	-	Non connection	
18	KEY	O	KEY signal for LD and OSD overlay (LD mode)	44	VSSA1	-	GND (D/A converter)	
19	PD	O	Phase comparison result output signal of horizontal sync. (LD mode)	45	ANACOMP	O	Analog composite output signal	
20	VFLD	O	Field discrimination signal at the digital signal output H : even field L : odd field	46	VDDA1	-	3.3V power supply (for built-in D/A converter only)	
21	DIGCOMP9	O	Digital composite signal output (MSB) Digital C signal output (MSB)	47	BF	O	Burst flag signal	
22	DIGCOMP8			48	XBLK	O	H/V composite blanking signal	
23	DIGCOMP7			49	N.C.	-	Non connection	
24	DIGCOMP6			50	VSS	-	GND	
25	DIGCOMP5			51	TEST0	-	Normally, set to "open".	
26	VSS			-	GND	52	TEST1	-

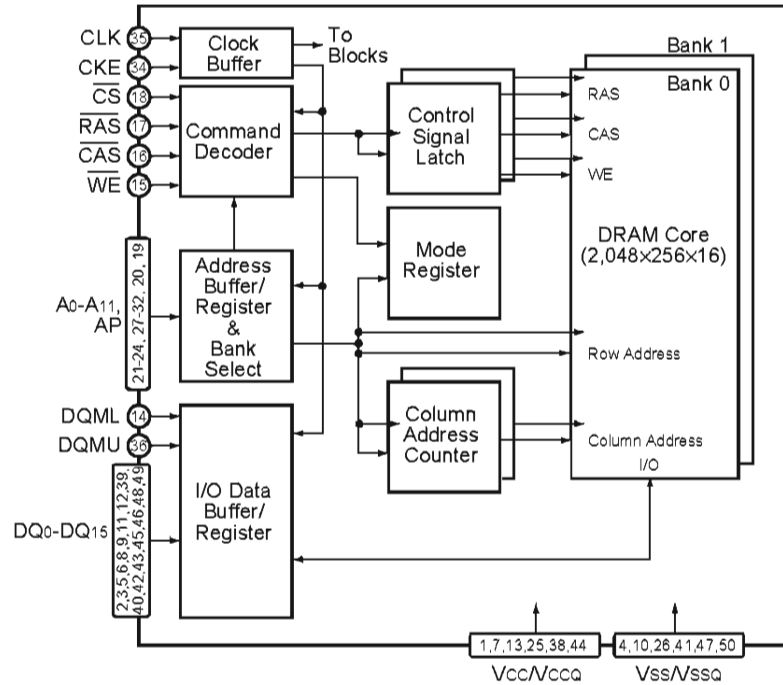
No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function		
53	DAIIN	I	Digital data input of external input (SPDIF)	92	HADRS10	I	CPU address bus signal (MSB)		
54	CDDATA	I	Audio data input of external input (correspond to CD)	93	HADRS9	I	CPU address bus signal		
55	CDLR	I	Data channel clock input of external input (correspond to CD)	94	HADRS8				
56	CDBCK	I	Data clock input of external input (correspond to CD)	95	HADRS7				
57	AODATA3	O	Audio decode data	96	VSS	-	GND		
58	AODATA2			97	VDD	-	3.3V power supply		
59	AODATA1			98	HADRS6	I	CPU address bus signal		
60	VSS	-	GND	99	HADRS5				
61	VDD	-	3.3V power supply	100	HADRS4				
62	AODATA0	O	Audio decode data	101	HADRS3	I	CPU address bus signal (LSB)		
63	AOPCM	O	Digital audio interface output (compression data)	102	HADRS2				
64	AODAI	O	Digital audio interface output (decode data)	103	HDATA15	I/O	CPU data bus signal (MSB)		
65	LRCK	O	Data channel clock for D/A and digital filter	104	HDATA14		CPU data bus signal		
66	AOMCK	O	Master clock for D/A and digital filter	105	HDATA13				
67	BCK	O	Bit clock for D/A and digital filter	106	HDATA12	I/O	CPU data bus signal		
68	ICED1	-	Pin for emulator Normally, set to "open".	107	VSS			-	GND
69	ICED0			108	HDATA11			I/O	CPU data bus signal
70	ICEBRK			109	HDATA10				
71	XDSPRST			110	HDATA9				
72	VSS	-	GND	111	HDATA8			I/O	CPU data bus signal
73	N.C.	-	Non connection	112	HDATA7				
74	TEST2	-	Normally, set to "open".	113	HDATA6	I/O	CPU data bus signal		
75	TEST3			114	VDD			-	3.3V power supply
76	TEST4			115	HDATA5	I/O	CPU data bus signal		
77	TEST5			116	HDATA4				
78	SD7	I	Parallel data input	117	HDATA3	I/O	CPU data bus signal		
79	VDD	-	3.3V power supply	118	HDATA2				
80	SD6	I	Parallel data input	119	VSS	-	GND		
81	SD5			120	HDATA1	I/O	CPU data bus signal		
82	SD4			121	HDATA0	I/O	CPU data bus signal (LSB)		
83	SD3			122	BUSSEL	I	Bus width selection signal (0 : 8-bit bus, 1 : 16-bit bus)		
84	SD2			123	XOSDACK	I	OSD data acknowledge signal		
85	VSS	-	GND	124	XOSDREQ	O	OSD data request signal		
86	SD1	I	Parallel data input	125	HCPUSEL1	I	CPU selection signal (00 :SPARC, 01 :86 system, 10 :68 system, 11 :Reserve)		
87	SD0			126	HCPUSEL0				
88	XERR	I	Error input signal	127	XINT3	O	Interrupt request signal to the CPU		
89	XSACK	I	Acknowledge signal	128	XINT2				
90	XTEST	I	Set to "H" at normal use	129	XINT1				
91	SREQ	O	Data request signal	130	VSS	-	GND		

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
131	VDD	–	3.3V power supply	170	XMDRCAS	O	CAS signal for SDRAM
132	XINT0	O	Interrupt request signal to CPU	171	XMDRDQM1	O	Input mask / output enable signal for SDRAM
133	XEXTRDY	O	SPARC, 68 system : Ready signal to CPU 86 system : Acknowledge (ACK) signal to CPU	172	VSS	–	GND
134	HRW	I	CPU read / write signal	173	XMDRWE	O	Write enable signal for SDRAM
135	HCLKIN	I	Host clock input	174	XMDRDQM0	O	Input mask / output enable signal for SDRAM
136	XHCS	I	LSI chip select signal	175	MDRDAT8	I/O	Data bus signal for SDRAM
137	XHAS	I	SPARC, 68 system : CPU address strobe 86 system : CPU address status	176	VSS	–	GND
138	XHBE3	I	CPU byte enable signal	177	MDRDAT7	I/O	Data bus signal for SDRAM
139	XHBE2			178	MDRDAT9		
140	XHBE1			179	MDRDAT6		
141	XHBE0			180	MDRDAT10		
142	VSS	–	GND	181	MDRDAT5		
143	MDRADR4	O	Address signal for SDRAM	182	VSS	–	GND
144	MDRADR3			183	VDD	–	3.3V power supply
145	MDRADR5			184	MDRDAT11	I/O	Data bus signal for SDRAM
146	MDRADR2			185	MDRDAT4		
147	VDD	–	3.3V power supply	186	MDRDAT12		
148	VSS	–	GND	187	MDRDAT3		
149	MDRADR6	O	Address signal for SDRAM	188	MDRDAT13		
150	MDRADR1			189	VSS	–	GND
151	MDRADR7			190	MDRDAT2	I/O	Data bus signal for SDRAM
152	MDRADR0			191	MDRDAT14		
153	MDRADR8	192	MDRDAT1				
154	VSS	–	GND	193	MDRDAT15		Data bus signal for SDRAM (MSB)
155	TEST6	–	"L" status normally	194	MDRDAT0	I/O	Data bus signal for SDRAM (LSB)
156	TEST7			195	VSS	–	GND
157	TEST8			196	N.C.	–	Non connection
158	TEST9			197	ICK27M	I	System clock input
159	MDRADR10	O	Address signal for SDRAM	198	VSS	–	GND
160	MDRADR9			199	OCK27M	O	System clock output
161	MDRADR11			200	VSSA(VCO)	–	GND (for VCO only)
162	XMDRCS	O	Chip select signal for SDRAM	201	VDDA(VCO)	–	3.3V power supply (for VCO only)
163	MDRCKE	O	Clock enable signal for SDRAM	202	ILPF	O	PLL block inverter output for audio
164	VSS	–	GND	203	MLPF	I	PLL block inverter input for audio
165	VDD	–	3.3V power supply	204	OLPF	O	Phase detector output for audio
166	XMDRRAS	O	RAS signal for SDRAM	205	OVCO	I	VCO input for audio clock
167	MDRCLK	O	Clock output signal for SDRAM	206	VSS	–	GND
168	VSS	–	GND	207	XPLLST	I	PLL section reset signal
169	MDRCLKIN	I	Clock input signal for SDRAM	208	XSYNCRST	I	SYNC reset signal

## ■ MB811171622A-100FN (DVDM ASSY : IC802)

• Code Buffer (16M bit SDRAM)

### ● Block Diagram



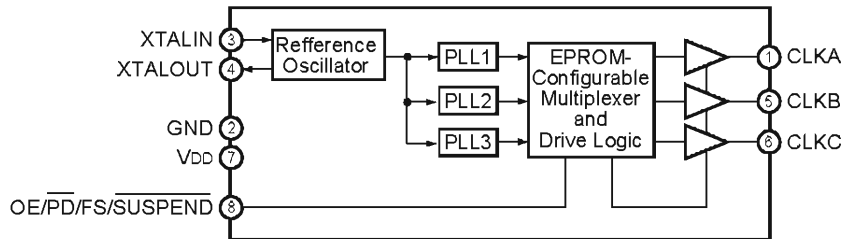
### ● Pin Function

No.	Pin Name	Function	No.	Pin Name	Function
1	VCC	Power supply (+ 3.3V)	26	VSS	Ground
2	DQ0	Data input/output	27	A4	Address input Row : A0 to A10 , Column : A0 to A7
3	DQ1		28	A5	
4	VSSQ	Ground	29	A6	
5	DQ2	Data input/output	30	A7	
6	DQ3		31	A8	
7	VCCQ	Power supply (+ 3.3V)	32	A9	
8	DQ4	Data input/output	33	DU	
9	DQ5		34	CKE	Clock enable
10	VSSQ	Ground	35	CLK	Clock input
11	DQ6	Data input/output	36	DQMU	Input mask / Output enable
12	DQ7		37	DU	Don't use (use for open)
13	VCCQ	Power supply (+ 3.3V)	38	VCCQ	Power supply (+ 3.3V)
14	DQML	Input mask / Output enable	39	DQ8	Data input/output
15	WE	Write enable	40	DQ9	
16	CAS	Column address strobe	41	VSSQ	Ground
17	RAS	Row address strobe	42	DQ10	Data input/output
18	CS	Chip select	43	DQ11	
19	A11 (BA)	Bank select	44	VCCQ	Power supply (+ 3.3V)
20	A10/AP	Address input Row : A0 to A10 , Column : A0 to A7 / Auto pre-charge enable	45	DQ12	Data input/output
21	A0	Address input Row : A0 to A10 , Column : A0 to A7	46	DQ13	
22	A1		47	VSSQ	Ground
23	A2		48	DQ14	Data input/output
24	A3		49	DQ15	
25	VCC	Power supply (+ 3.3V)	50	VSS	Ground

## ■ CY2081SL-611 (DVDM ASSY : IC813)

• Clock Generate IC

### • Block Diagram



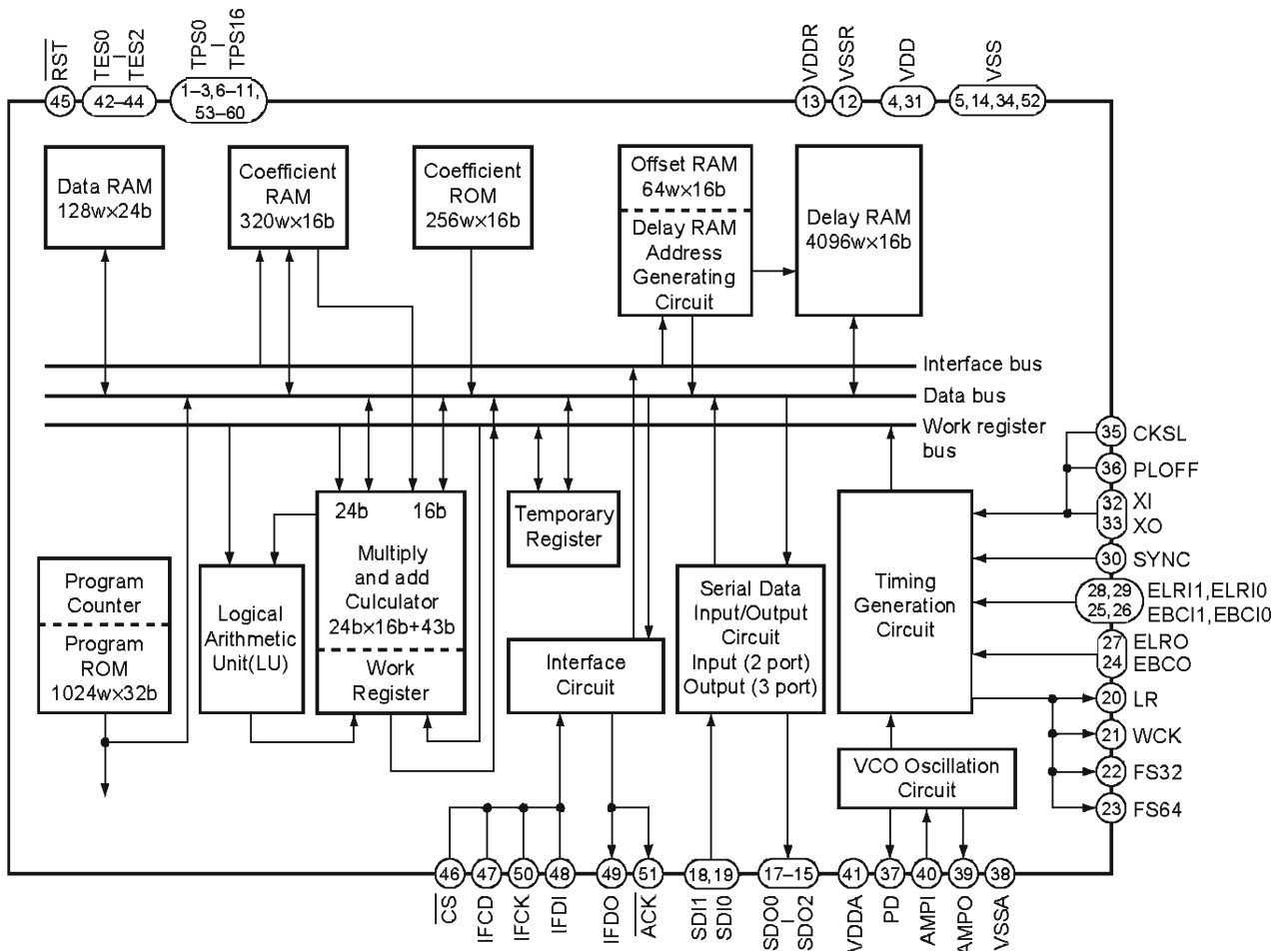
### • Pin Function

No.	Pin Name	Function
1	CLKA	Configurable clock output
2	GND	Ground
3	XTALIN	Reference crystal input or external reference clock input
4	XTALOUT	Reference crystal feedback
5	CLKB	Configurable clock output
6	CLKC	Configurable clock output
7	VDD	Voltage supply
8	OE/PD/FS/SUSPEND	Output control pin Either active-High output enable, active-Low power down, CLKA frequency select, or active-Low suspend input

## ■ PD2058A ( DVDM ASSY : IC901 )

• Digital Signal Processor For Audio

### • Block Diagram



### • Pin Function

No.	Pin Name	I/O	Function
1	TP8	○	Test data output pin Normally, use with open.
2	TP7		
3	TP6		
4	VDD	-	Power supply pin
5	VSS	-	Ground pin
6	TP5	○	Test data output pin Normally, use with open.
7	TP4		
8	TP3		
9	TP2		
10	TP1		
11	TP0		

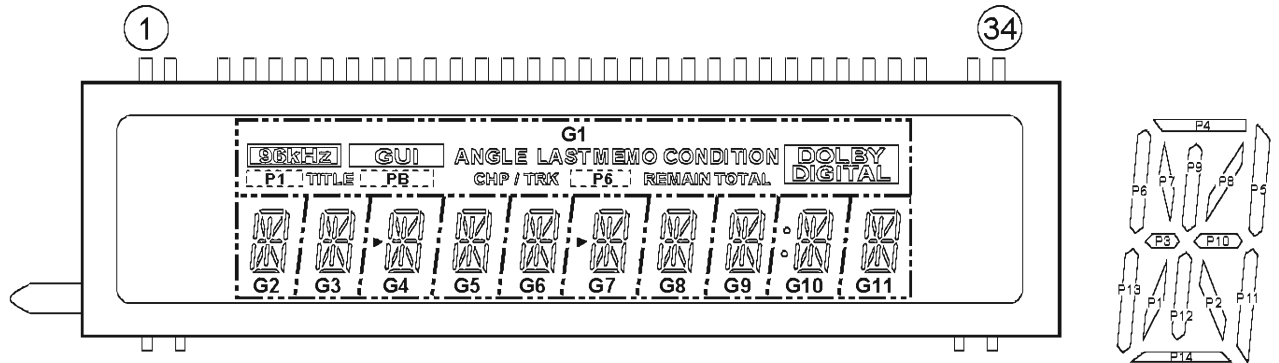
No.	Pin Name	I/O	Function	
12	VSSR	–	Ground pin for internal delay RAM (DLRAM)	
13	VDDR	–	Power supply pin for internal delay RAM (DLRAM)	
14	VSS	–	Ground pin	
15	SDO2	O	Serial data output pin Output data length is able to select the 24-bit or 16-bit by controlling the microprocessor.	
16	SDO1			
17	SDO0			
18	SDI1	I	Serial data input pin Input data length is able to select the 24-bit or 16-bit by controlling the microprocessor.	
19	SDI0			
20	LR	O	LR clock output pin (1 fs)	
21	WCK	O	Word clock output pin (2 fs)	
22	FS32	O	Bit clock output pin (32 fs)	
23	FS64	O	Bit clock output pin (64 fs)	
24	EBC0	I	Bit clock input pin Inputs shift clock for SDO0/1/2 data output.	
25	EBC1	I	Bit clock input pin Inputs shift clock for SDI0/1 data input.	For SDI1 data input
26	EBC10			For SDI0 data input
27	ELRO	I	LR clock input pin Inputs LR clock for SDO0/1/2 data output.	
28	ELRI1	I	LR clock input pin Inputs LR clock for SDI0/1 data input.	For SDI1 data input
29	ELRI0			For SDI0 data input
30	SYNC	I	Sync. signal input pin Turn the program counter into "0" forcibly by the edge of SYNC signal. Moreover, set the polarity by controlling the microprocessor.	
31	VDD	–	Power supply pin	
32	XI	I	Crystal oscillator connection pin / external clock input pin	
33	XO	O	Crystal oscillator connection pin	
34	VSS	–	Ground pin	
35	CKSL	I	Oscillation clock switch pin L : correspond to 384 fs H : correspond to 512 fs	
36	PLOFF	I	X'tal oscillation mode / VCO oscillation mode switch pin L :built-in VCO oscillation mode H :X'tal oscillation mode	
37	PD	O	Phase comparison data output pin	
38	VSSA	–	Analog ground pin	
39	AMPO	O	Amp. output pin for low-pass filter	
40	AMPI	I	Amp. input pin for low-pass filter	
41	VDDA	–	Analog power supply pin	
42	TES0	I	Test pin Normally, use for "H" or open.	
43	TES1			
44	TES2			
45	$\overline{\text{RST}}$	I	Reset signal input pin	
46	$\overline{\text{CS}}$	I	Chip select signal input pin When $\overline{\text{CS}}$ is L active, data is able to transfer from the microprocessor.	
47	IFCD	I	Command or data input mode selection pin from the microprocessor Recognize the command for "H" period and the data for "L" period.	
48	IFDI	I	Microprocessor data input pin Receive the command and data by LSB first.	
49	IFDO	O	Data output pin of data bus (DBUS) Transmit the data of data bus to the microprocessor by LSB first.	
50	IFCK	I	Shift clock input pin for microprocessor data	
51	$\overline{\text{ACK}}$	O	Acknowledge signal output pin for microprocessor When parity of command and data is OK, outputs the acknowledge signal.	
52	VSS	–	Ground pin	
53	TP16	O	Test data output pin Normally, use with open.	
54	TP15			
55	TP14			
56	TP13			
57	TP12			
58	TP11			
59	TP10			
60	TP9			



## 4. FL INFORMATION

### ■ VAW1046 (FLKB ASSY : V101)

#### • FL DISPLAY



#### • ANODE AND GRID ASSIGNMENT

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11
P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1
P2	ANGLE	P2	P2	P2	P2	P2	P2	P2	P2	P2	P2
P3	TITLE	P3	P3	P3	P3	P3	P3	P3	P3	P3	P3
P4	LAST MEMO	P4	P4	P4	P4	P4	P4	P4	P4	P4	P4
P5	CONDITION	P5	P5	P5	P5	P5	P5	P5	P5	P5	P5
P6	P6	P6	P6	P6	P6	P6	P6	P6	P6	P6	P6
P7	CHP/TRK	P7	P7	P7	P7	P7	P7	P7	P7	P7	P7
P8	P8	P8	P8	P8	P8	P8	P8	P8	P8	P8	P8
P9	REMAIN	P9	P9	P9	P9	P9	P9	P9	P9	P9	P9
P10	DOLBY DIGITAL	P10	P10	P10	P10	P10	P10	P10	P10	P10	P10
P11	GUI	P11	P11	P11	P11	P11	P11	P11	P11	P11	P11
P12	96kHz	P12	P12	P12	P12	P12	P12	P12	P12	P12	P12
P13		P13	P13	P13	P13	P13	P13	P13	P13	P13	P13
P14		P14	P14	P14	P14	P14	P14	P14	P14	P14	P14
P15	TOTAL										

#### • PIN ASSIGNMENT

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Assignment	F1	F1	NP	P15	P14	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2

Pin No.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Assignment	P1	G11	G10	G9	G8	NL	NL	G7	G6	G5	G4	G3	G2	G1	NP	F2	F2

F1, F2 : Filament      G1~G11 : Grid      P1~P15 : Anode      NP : No Pin      NL : No Lead

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**No. 0201**  
DECEMBER 1998

### 3. IC INFORMATION

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

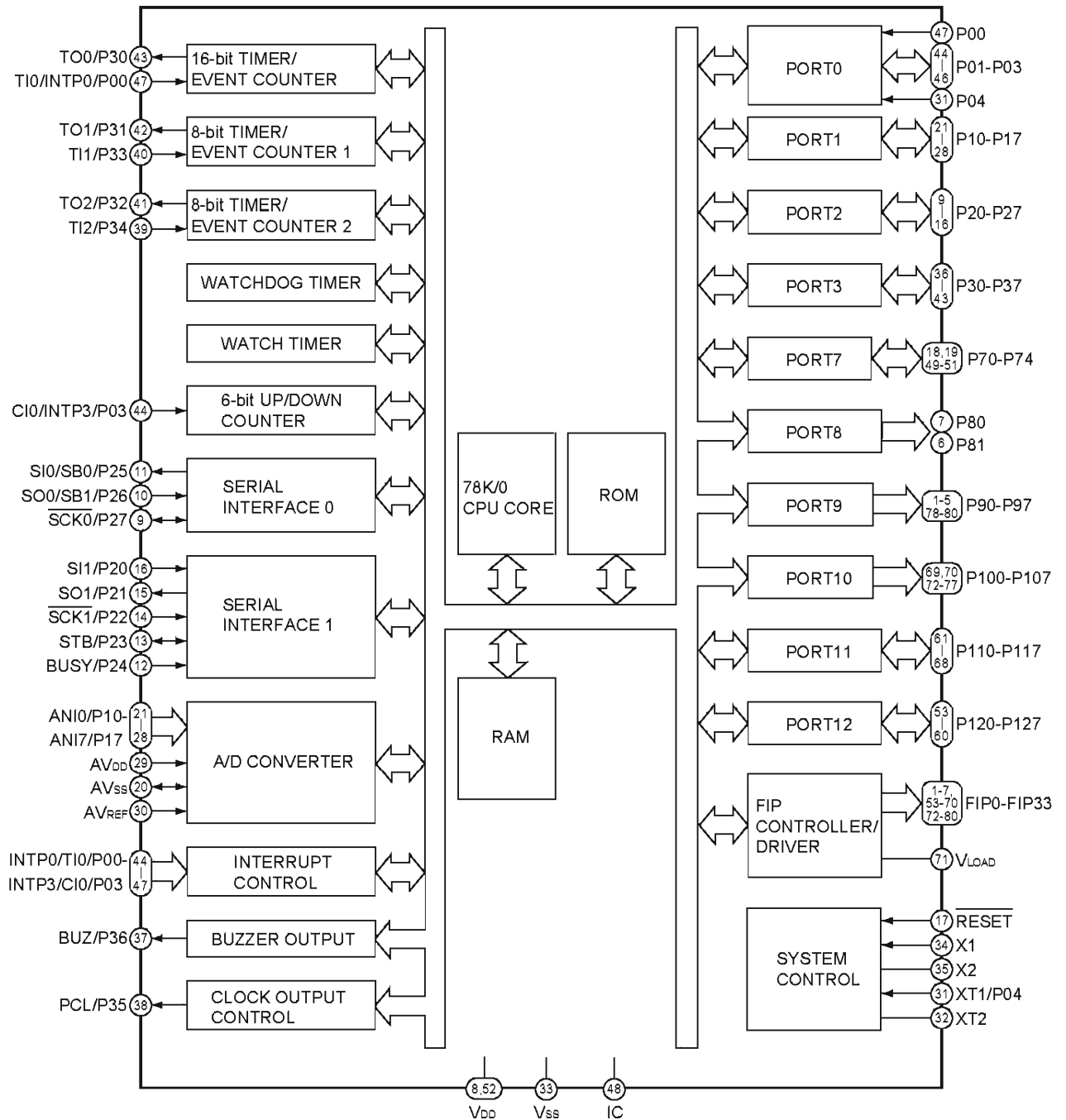
• **List of IC**

PD4890A, PD0260A2, PD0261A2, LA9700M, BA6195FP, LC78650E-P, PD4889A, SRM2B256SLMX70, VYW1536, PD3381A, MB86371, MB811171622A-100FN, CY2081SL-611, PD2058A

■ **PD4890A (FLKB ASSY : IC101)**

• **Mode Control IC**

• **Block Diagram**



● Pin Function

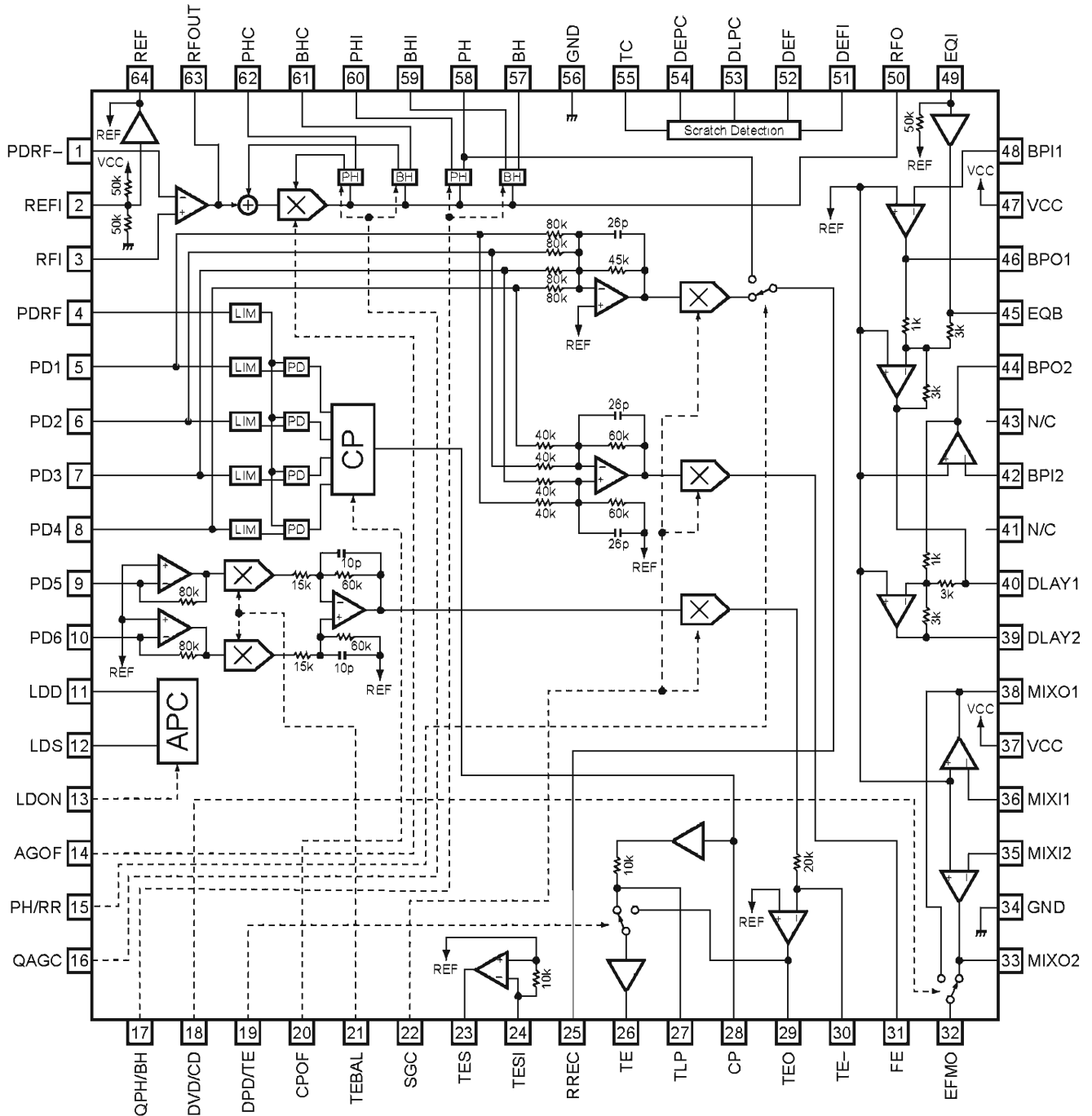
No.	Mark	Pin Name	I/O	Function
1	P94	G7	O	FL timing output H : ON
2	P93	G6		
3	P92	G5		
4	P91	G4		
5	P90	G3		
6	P81	G2		
7	P80	G1		
8	VDD	VCC	-	Power supply pin
9	P27	(NC)	O	Not used
10	P26	(NC)		
11	P25	(NC)		
12	P24	LAMP	O	DVD lamp ON/OFF H : ON
13	P23	XREADY	O	Communication handshake line with the system controller L : Permit the communication
14	P22	SCK	I/O	Communication clock output with the system controller
15	P21	SO	I/O	Communication data output with the system controller
16	P20	SI	I	Communication data input with the system controller
17	RESET	RESET IN	I	Reset input L : reset
18	P74	(NC)	O	Not used
19	P73	(NC)	O	Not used
20	AVss	Vss	-	GND pin
21	P17	POWER ON	O	SW 5V ON/OFF H : ON
22	P16	RESET OUT	O	System reset output L : reset
23	P15	(NC)	O	Not used
24	P14	(NC)		
25	P13	KIN1	I	Key input
26	P12	KIN0		
27	P11	MS1	I	Destination judgement input
28	P10	MS0		
29	AVDD	AVDD	-	Power supply pin
30	AVREF	AVREF	-	Reference voltage
31	P04	P04	I	Not used
32	XT2	(NC)	-	Not used
33	VSS	VSS	-	GND pin
34	X1	X1	I	Connect a microprocessor clock
35	X2	X2	-	
36	P37	(NC)	O	Not used
37	P36	(NC)		
38	P35	(NC)		
39	P34	P34	I	Not used
40	P33	P33		

No.	Mark	Pin Name	I/O	Function
41	P32	P32	I	Not used
42	P31	P31		
43	P30	(NC)		
44	P03	P03	I	Not used
45	P02	ON POWER	I	Switch the STBY/POWER ON at rising edge the FL controller L : STBY
46	P01	LT	I	Communication handshake line with the system controller H : Permit the communication
47	P00	SEL IR	I	Remote control signal input
48	IC	IC	-	---
49	P72	(NC)	O	Not used
50	P71	FL OFF LED	O	FL OFF LED ON/OFF L : ON
51	P70	(NC)	O	Not used
52	VDD	VDD	-	Power supply pin
53	P127	(NC)	O	Not used
54	P126	(NC)	O	Not used
55	P125	(NC)		
56	P124	(NC)		
57	P123	(NC)		
58	P122	(NC)		
59	P121	(NC)		
60	P120	(NC)		
61	P117	P15	O	FL segment output H : ON
62	P116	P14		
63	P115	P13		
64	P114	P12		
65	P113	P11		
66	P112	P10		
67	P111	P9		
68	P110	P8		
69	P107	P7		
70	P106	P6		
71	VLOAD	-27V	-	- 27V input H : ON
72	P105	P5	O	FL segment output H : ON
73	P104	P4		
74	P103	P3		
75	P102	P2		
76	P101	P1		
77	P100	G11	O	FL timing output H : ON
78	P97	G10		
79	P96	G9		
80	P95	G8		

# LA9700M (DVDM ASSY : IC101)

• RF IC

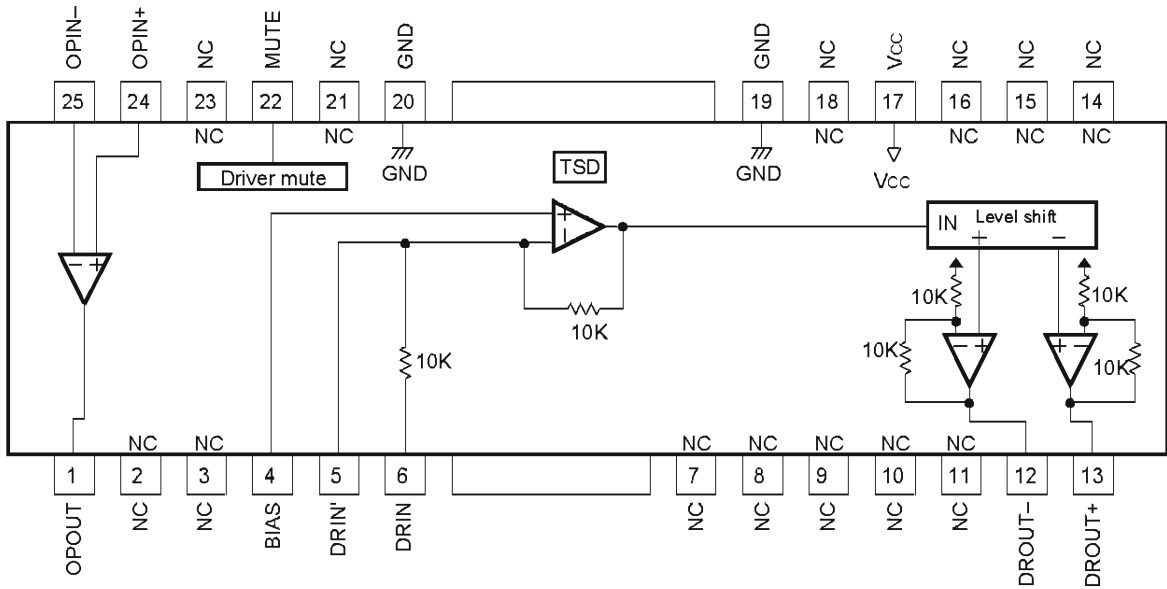
## • Block Diagram



## BA6195FP (DVDM ASSY : IC161)

### • Spindle Driver

#### • Block Diagram



#### • Pin Function

No.	Pin Name	Function	No.	Pin Name	Function
1	OPOUT	OP amp. output pin	14	N.C.	Non Connection
2	N.C.	Non Connection	15	N.C.	
3	N.C.		16	N.C.	
4	BIAS		Bias pin	17	VCC
5	DRIN'	Driver gain adjustment pin	18	N.C.	Non Connection
6	DRIN	Driver gain input pin	19	GND	Sub-strait GND pin
7	N.C.	Non Connection	20	GND	
8	N.C.				
9	N.C.				
10	N.C.				
11	N.C.				
12	DROUT -	Driver negative output pin (for input)	21	N.C.	Non Connection
13	DROUT +	Driver positive output pin (for input)	22	MUTE	Mute pin
			23	N.C.	Non Connection
			24	OPIN +	OP amp. non-inverting input pin
			25	OPIN -	OP amp. inverting input pin

## ■ PD4889A (DVDM ASSY : IC501)

### • Mechanism Control IC

#### ● Pin Function

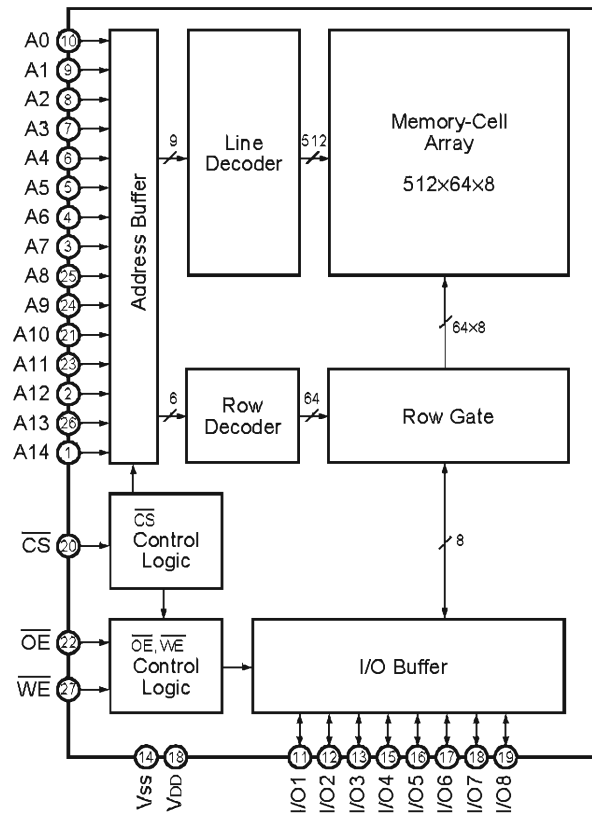
No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	LODDR	I/O	Loading motor drive output	33	XDSPRST	-	Reset pulse for servo DSP "L"
2	DVD/XCD	O	Clock switch H : DVD , L : CD	34	ASTB	O	Address strobe of multiplexed address/data bus "H"
3	AGOFF	O	Turn AGC of RF IC to OFF for "H"	35	XRST	I	CPU reset input "L"
4	EFLG	I	Count data input of error rate Measureable by using timer 1 and 2.	36	SBSY	INT	Subcode frame sync. input (H : S0+S1 period)
5	FSX	I	Error rate count area input (EFM frame sync.) H : C1 , L : C2	37	SHAKE	INT	Not used
6	P35/PCL	-	Not used (pull down)	38	XABUSY	INT	DSP auto sequence busy input "L"
7	XTOFF	I/O	High impedance (input) at DEFECT ON "L" output at DEFECT OFF	39	XIRQ2	INT	LSI-11 interrupt input "L"
8	XCBUSY	I	DVD command reception is possible "L"	40	VDD	-	Power supply pin
9	VSS	-	GND	41	X2	-	Connect a ceramic resonator
10	MAD0	I/O	External address / data bus	42	X1	-	
11	MAD1			43	IC (Vpp)	-	GND
12	MAD2			44	XT2	-	Not used
13	MAD3			45	DVDPPK	I	Not used
14	MAD4			46	AVss	-	GND
15	MAD5			47	LODPOS	I	Loading and clamp position SW input
16	MAD6			48	SLDPOS	I	Slider position SW input
17	MAD7			49	DORPOS	I	Not used
18	MA8	O	External address bus	50	XCURDET	I	Acuator over-current detection input (former TRDLMT) "L" Servo OFF for 300 ms.
19	MA9			51	DR/XLD	O	Not used
20	MA10			52	MON	O	Spindle motor ON output "H"
21	MA11			53	XCD2X	O	Not used
22	MA12			54	OEICG	O	"H" : OEIC gain up to 6dB
23	MA13			55	AVDD	-	Power supply pin
24	VSS	-	GND	56	AVREF	-	Reference power supply pin
25	MA14	O	External address bus	57	P_ERR	O	Not used
26	MA15			58	P21/SO1	-	Not used (pull down)
27	DRF	I	(FOK) Focus OK input	59	P22/XSK1	-	Not used (pull down)
28	V_PB	I	(LOCK) EFM servo lock signal "H"/"L" = rough servo / phase servo	60	XCSB	O	DSP parallel command setting output "L"
29	P62	-	Not used (pull down)	61	CLD	O	Not used
30	WRQ	I	Readable flag of subcode Q	62	LDSO	I	Not used
31	XRD	O	CPU read pulse "L"	63	LDSI	O	Not used
32	XWR	O	CPU write pulse "L"	64	LDSCK	I	Not used



## SRM2B256SLMX70 (DVD M ASSY : IC502)

• 256 K SRAM (For Mechanism Control IC)

### • Block Diagram



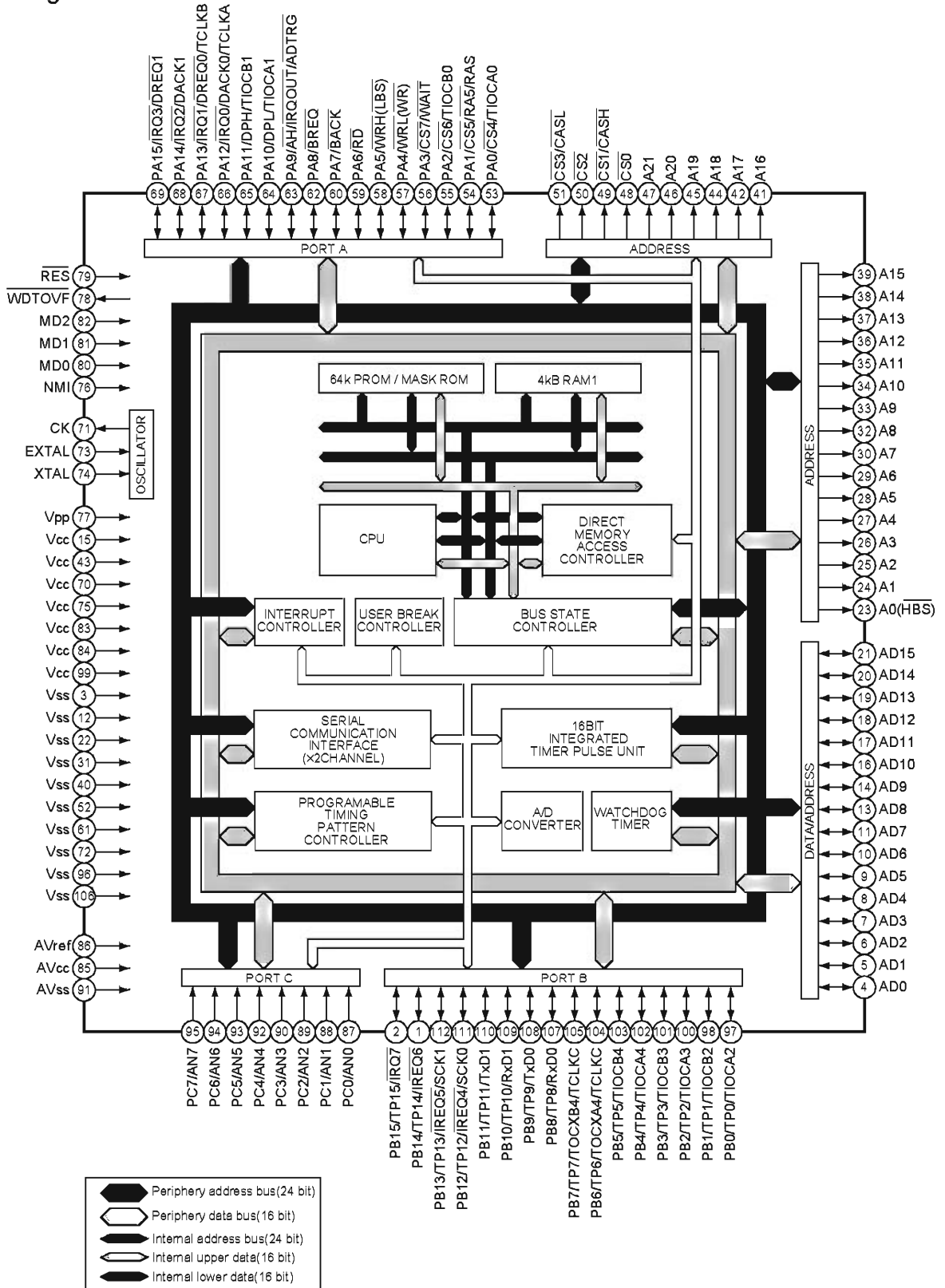
### • Pin Function

No.	Pin Name	Function	No.	Pin Name	Function
1	A14	Address input	15	I/O4	Data input/output
2	A12		16	I/O5	
3	A7		17	I/O6	
4	A6		18	I/O7	
5	A5		19	I/O8	
6	A4		20	$\overline{\text{CS}}$	Chip select
7	A3		21	A10	Address input
8	A2		22	$\overline{\text{OE}}$	Output enable
9	A1		23	A11	Address input
10	A0		24	A9	
11	I/O1	25	A8		
12	I/O2	Data input/output	26	A13	Write enable
13	I/O3		27	$\overline{\text{WE}}$	
14	VSS	GND (0V)	28	VDD	Power supply (2.7 to 5.5V)

# ■ PD3381A (DVDM ASSY : IC601)

• System Control CPU

## ● Block Diagram



● Pin Function

No.	Pin Name	I/O	Function
1	PB14/TP14/ $\overline{\text{IRQ6}}$	I/O	16 bit input/output (port B) / Timing pattern output / Interruption request
2	PB15/TP15/ $\overline{\text{IRQ7}}$		
3	VSS	I	Ground
4	AD0	I/O	16 bit bilateral data bus
5	AD1		
6	AD2		
7	AD3		
8	AD4		
9	AD5		
10	AD6		
11	AD7		
12	VSS	I	Ground
13	AD8	I/O	16 bit bilateral data bus
14	AD9		
15	VCC	I	Power supply
16	AD10	I/O	16 bit bilateral data bus
17	AD11		
18	AD12		
19	AD13		
20	AD14		
21	AD15		
22	VSS	I	Ground
23	A0 (HBS)	O	Address bus output (upper byte strobe signal)
24	A1	O	Address bus output
25	A2		
26	A3		
27	A4		
28	A5		
29	A6		
30	A7		
31	VSS	I	Ground
32	A8	O	Address bus output
33	A9		
34	A10		
35	A11		
36	A12		
37	A13		
38	A14		
39	A15		
40	VSS	I	Ground
41	A16	O	Address bus output
42	A17		
43	VCC	I	Power supply

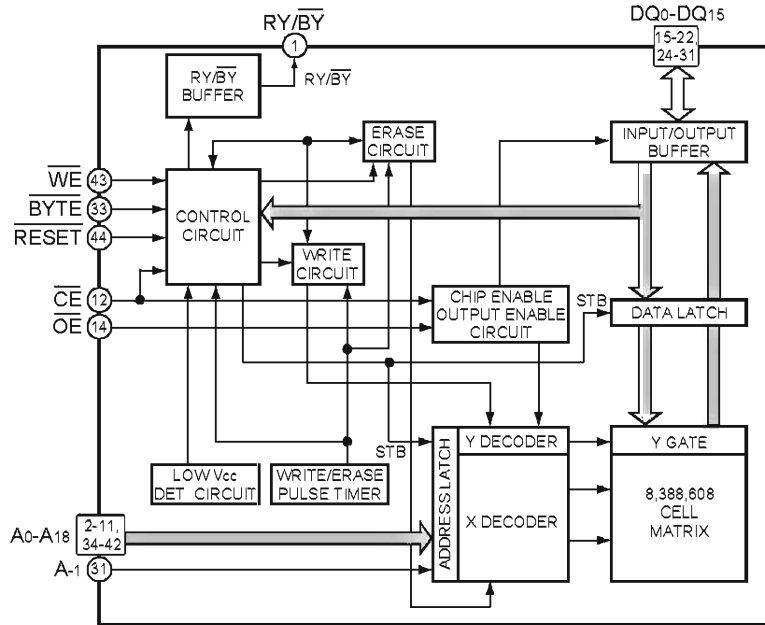
No.	Pin Name	I/O	Function
44	A18	O	Address bus output
45	A19		
46	A20		
47	A21		
48	$\overline{CS0}$	O	Chip select signal
49	$\overline{CS1}/\overline{CASH}$	O	Chip select signal / Column address strobe timing signal on the upper side of DRAM
50	$\overline{CS2}$	O	Chip select signal
51	$\overline{CS3}/\overline{CASL}$	O	Chip select signal / Column address strobe timing signal on the lower side of DRAM
52	VSS	I	Ground
53	PA0/ $\overline{CS4}/\overline{TIOCA0}$	I/O	16 bit input/output (port A) / Chip select signal / ITU input capture input/ITU output compare output (channel 0)
54	PA1/ $\overline{CS5}/\overline{RAS}$	I/O	16 bit input/output (port A) / Chip select signal / Low address strobe timing signal of DRAM
55	PA2/ $\overline{CS6}/\overline{TIOCB0}$	I/O	16 bit input/output (port A) / Chip select signal / ITU input capture input/ITU output compare output (channel 0)
56	PA3/ $\overline{CS7}/\overline{WAIT}$	I/O	16 bit input/output (port A) / Chip select signal / Wait input for bus cycle
57	PA4/ $\overline{WRL}$ ( $\overline{WR}$ )	I/O	16 bit input/output (port A) / External lower 8 bit writing (output at writing)
58	PA5/ $\overline{WRH}$ ( $\overline{LBS}$ )	I/O	16 bit input/output (port A) / External upper 8 bit writing (lower byte strobe signal)
59	PA6/ $\overline{RD}$	I/O	16 bit input/output (port A) / External reading out
60	PA7/ $\overline{BACK}$	I/O	16 bit input/output (port A) / Bus claim request acknowledge
61	VSS	I	Ground
62	PA8/ $\overline{BREQ}$	I/O	16 bit input/output (port A) / Bus claim request
63	PA9/ $\overline{AH}/\overline{IRQOUT}/\overline{ADTRG}$	I/O	16 bit input/output (port A) / Address hold timing signal / Interruption request output at slave / A/D conversion trigger input
64	PA10/ $\overline{DPL}/\overline{TIOCA1}$	I/O	16 bit input/output (port A) / Data bus parity on the lower side / ITU input capture input/ITU output compare output (channel 1)
65	PA11/ $\overline{DPH}/\overline{TIOCB1}$	I/O	16 bit input/output (port A) / Data bus parity on the upper side / ITU input capture input/ITU output compare output (channel 1)
66	PA12/ $\overline{IRQ0}/\overline{DACK0}/\overline{TCLKA}$	I/O	16 bit input/output (port A) / Interruption request / DMA transfer request reception (channel 0) / ITU timer clock input
67	PA13/ $\overline{IRQ1}/\overline{DREQ0}/\overline{TCLKB}$	I/O	16 bit input/output (port A) / Interruption request / DMA transfer request (channel 0) / ITU timer clock input
68	PA14/ $\overline{IRQ2}/\overline{DACK1}$	I/O	16 bit input/output (port A) / Interruption request / DMA transfer request reception (channel 1)
69	PA15/ $\overline{IRQ3}/\overline{DREQ1}$	I/O	16 bit input/output (port A) / Interruption request / DMA transfer request (channel 1)
70	VCC	I	Power supply
71	CK	O	System clock output
72	VSS	I	Ground
73	EXTAL	I	Crystal oscillator input External clock input
74	XTAL	I	Crystal oscillator input
75	VCC	I	Power supply
76	NMI	I	Non-maskable interruption input
77	VPP	I	Power supply of PROM program
78	$\overline{WDTOVF}$	O	Watchdog timer over-flow output
79	$\overline{RES}$	I	Reset input
80	MD0	I	Mode setting pins
81	MD1		
82	MD2		
83	VCC	I	Power supply
84	VCC		

No.	Pin Name	I/O	Function
85	AVCC	I	Analog power supply
86	AVREF	I	Analog reference power supply
87	PC0/AN0	I	8 bit input (port C) / Analog signal input
88	PC1/AN1		
89	PC2/AN2		
90	PC3/AN3		
91	AVSS	I	Analog Ground
92	PC4/AN4	I	8 bit input (port C) / Analog signal input
93	PC5/AN5		
94	PC6/AN6		
95	PC7/AN7		
96	VSS	I	Ground
97	PB0/TP0/TIOCA2	I/O	16 bit input/output (port B) / Timing pattern output / ITU input capture input/ITU output compare output (channel 2)
98	PB1/TP1/TIOCB2		
99	VCC	I	Power supply
100	PB2/TP2/TIOCA3	I/O	16 bit input/output (port B) / Timing pattern output / ITU input capture input/ITU output compare output (channel 3)
101	PB3/TP3/TIOCB3		
102	PB4/TP4/TIOCA4	I/O	16 bit input/output (port B) / Timing pattern output / ITU input capture input/ITU output compare output (channel 4)
103	PB5/TP5/TIOCB4		
104	PB6/TP6/TOCXA4/TCLKC	I/O	16 bit input/output (port B) / Timing pattern output / ITU output compare output (channel 4) / ITU timer clock input
105	PB7/TP7/TOCXB4/TCLKD		
106	VSS	I	Ground
107	PB8/TP8/RXD0	I/O	16 bit input/output (port B) / Timing pattern output / Receive data input (channel 0)
108	PB9/TP9/TXD0	I/O	16 bit input/output (port B) / Timing pattern output / Transmission data output (channel 0)
109	PB10/TP10/RXD1	I/O	16 bit input/output (port B) / Timing pattern output / Receive data input (channel 1)
110	PB11/TP11/TXD1	I/O	16 bit input/output (port B) / Timing pattern output / Transmission data output (channel 1)
111	PB12/TP12/ $\overline{\text{IRQ4}}$ /SCK0	I/O	16 bit input/output (port B) / Timing pattern output / Interruption request / Serial clock input/output (channel 0)
112	PB13/TP13/ $\overline{\text{IRQ5}}$ /SCK1	I/O	16 bit input/output (port B) / Timing pattern output / Interruption request / Serial clock input/output (channel 1)

## ■ VYW1602 (DVDM ASSY : IC603)

• Flash ROM

### ● Block Diagram



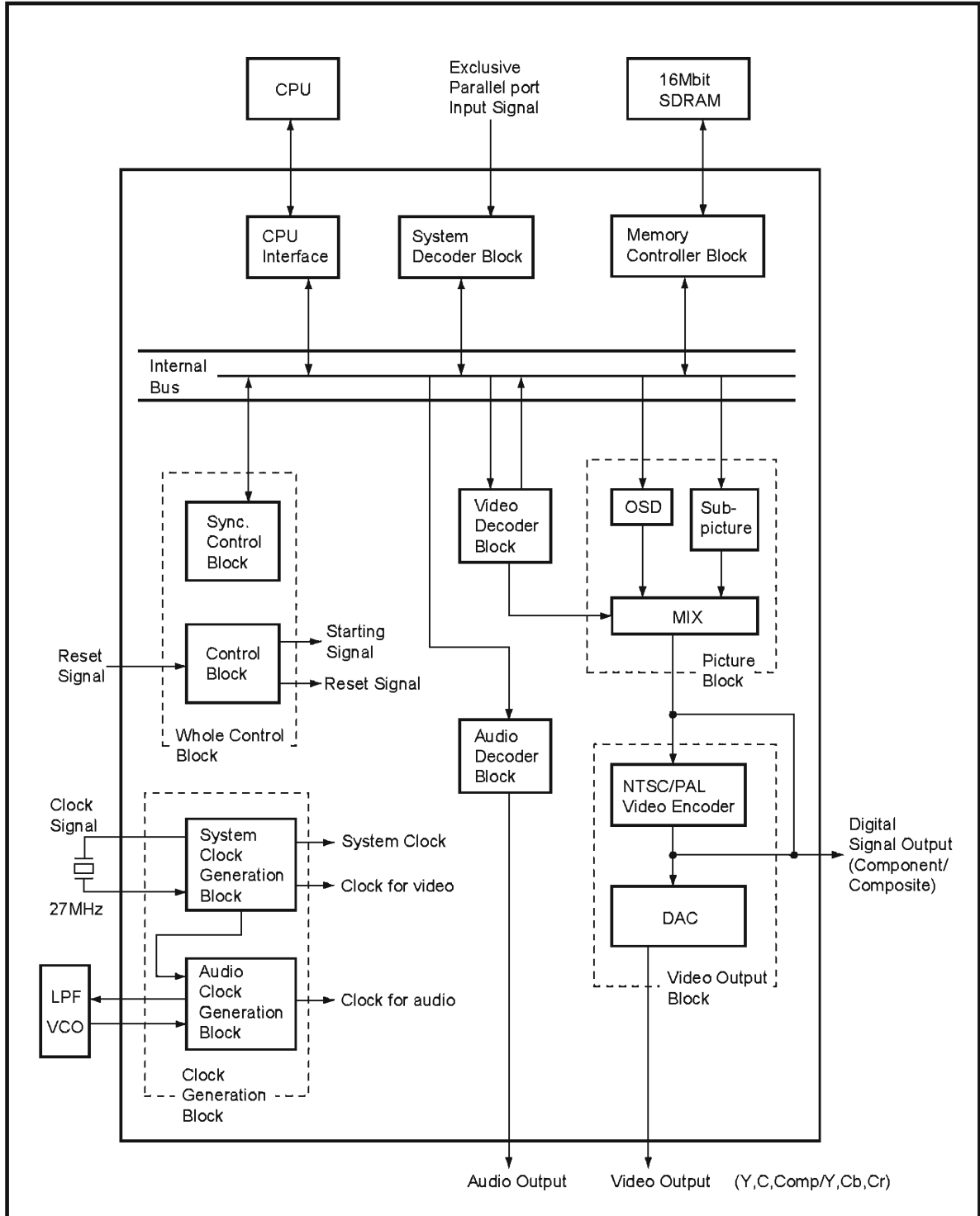
### ● Pin Function

No.	Pin Name	Function	No.	Pin Name	Function
1	RY/BY	Ready / Busy output	23	VCC	Power supply (+5.0V ± 10% or ± 5%)
2	A18	Address input	24	DQ4	Data input / output
3	A17				
4	A7				
5	A6				
6	A5				
7	A4				
8	A3				
9	A2				
10	A1				
11	A0				
12	CE		Chip enable	31	DQ15/A-1
13	VSS	Ground	32	VSS	Ground
14	OE	Output enable	33	BYTE	Switch the 8 bit and 16 bit modes
15	DQ0	Data input/output	34	A16	Address input
16	DQ8				
17	DQ1				
18	DQ9				
19	DQ2				
20	DQ10				
21	DQ3				
22	DQ11				
43	WE	Write enable	44	RESET	Hardware reset

■ MB86371 (DVDM ASSY : IC801)

• MPEG2 Decoder LSI For DVD

● Block Diagram



● Pin Function

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
1	CLKSEL	I	ON/OFF signal of PLL ("H" : ON, "L" : OFF)	27	VDD	-	3.3V power supply
2	DIGCPN7	O	Digital component signal output (MSB) Digital Y signal output (9-bit) (MSB)	28	DIGCOMP4	O	Digital composite signal output Digital C signal output
3	VSS	-	GND	29	DIGCOMP3		
4	DIGCPN6	O	Digital component signal output Digital Y signal output (9-bit)	30	DIGCOMP2		
5	DIGCPN5			31	DIGCOMP1		
6	DIGCPN4			32	DIGCOMP0		
7	DIGCPN3			33	DACK	O	27 MHz clock output
8	DIGCPN2			34	N.C.	-	Non connection
9	DIGCPN1			35	VSSA3	-	GND (D/A converter)
10	VDD	-	3.3V power supply	36	ANAC	O	Analog color (C) output signal
11	DIGCPN0	O	Digital component signal output (LSB) Digital Y signal output (9-bit) (LSB)	37	VDDA3	-	3.3V power supply (for built-in D/A converter only)
12	RBSEL	O	Cb and Cr discrimination signal at the digital component signal output. LSB at the digital Y signal output.	38	VSSA2	-	GND (D/A converter)
13	XHS	O	Horizontal sync. output signal	39	ANAY	O	Analog luminance (Y) output signal
14	XVS	O	Vertical sync. output signal	40	VDDA2	-	3.3V power supply (for built-in D/A converter only)
15	VSS	-	GND	41	VREF	I	Reference voltage for D/A converter
16	XRESET	I	LSI reset signal	42	VRO	O	Internal current setting pin of D/A converter
17	XLDCSYNC	I	External sync. signal input (LD mode)	43	N.C.	-	Non connection
18	KEY	O	KEY signal for LD and OSD overlay (LD mode)	44	VSSA1	-	GND (D/A converter)
19	PD	O	Phase comparison result output signal of horizontal sync. (LD mode)	45	ANACOMP	O	Analog composite output signal
20	VFLD	O	Field discrimination signal at the digital signal output H : even field L : odd field	46	VDDA1	-	3.3V power supply (for built-in D/A converter only)
21	DIGCOMP9	O	Digital composite signal output (MSB) Digital C signal output (MSB)	47	BF	O	Burst flag signal
22	DIGCOMP8			48	XBLK	O	H/V composite blanking signal
23	DIGCOMP7			49	N.C.	-	Non connection
24	DIGCOMP6			50	VSS	-	GND
25	DIGCOMP5			51	TEST0	-	Normally, set to "open".
26	VSS	-	GND	52	TEST1	-	"L" status normally



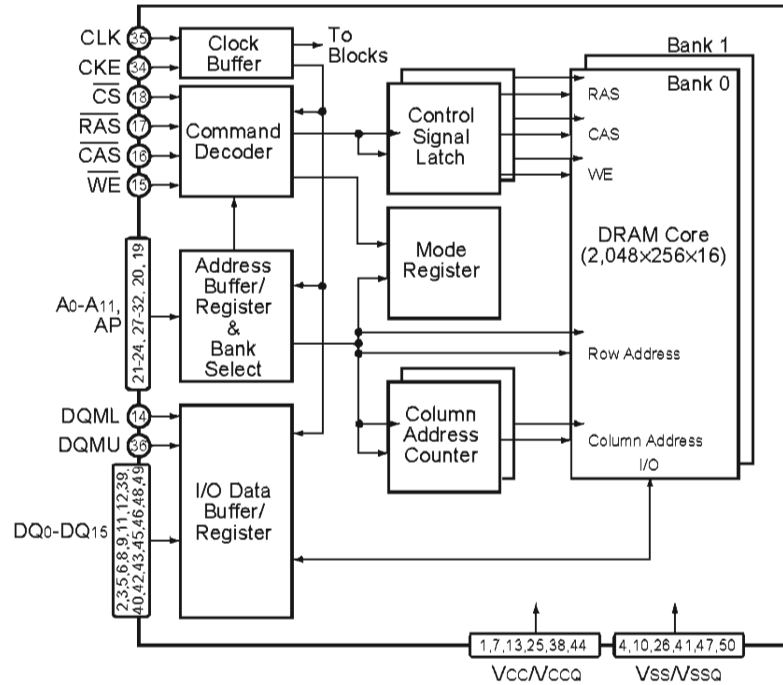
No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function		
53	DAIIN	I	Digital data input of external input (SPDIF)	92	HADRS10	I	CPU address bus signal (MSB)		
54	CDDATA	I	Audio data input of external input (correspond to CD)	93	HADRS9	I	CPU address bus signal		
55	CDLR	I	Data channel clock input of external input (correspond to CD)	94	HADRS8				
56	CDBCK	I	Data clock input of external input (correspond to CD)	95	HADRS7				
57	AODATA3	O	Audio decode data	96	VSS	-	GND		
58	AODATA2			97	VDD	-	3.3V power supply		
59	AODATA1			98	HADRS6	I	CPU address bus signal		
60	VSS	-	GND	99	HADRS5				
61	VDD	-	3.3V power supply	100	HADRS4				
62	AODATA0	O	Audio decode data	101	HADRS3	I	CPU address bus signal (LSB)		
63	AOPCM	O	Digital audio interface output (compression data)	102	HADRS2				
64	AODAI	O	Digital audio interface output (decode data)	103	HDATA15	I/O	CPU data bus signal (MSB)		
65	LRCK	O	Data channel clock for D/A and digital filter	104	HDATA14		CPU data bus signal		
66	AOMCK	O	Master clock for D/A and digital filter	105	HDATA13				
67	BCK	O	Bit clock for D/A and digital filter	106	HDATA12	I/O	CPU data bus signal		
68	ICED1	-	Pin for emulator Normally, set to "open".	107	VSS			-	GND
69	ICED0			108	HDATA11			I/O	CPU data bus signal
70	ICEBRK			109	HDATA10				
71	XDSPRST			110	HDATA9				
72	VSS	-	GND	111	HDATA8			I/O	CPU data bus signal
73	N.C.	-	Non connection	112	HDATA7				
74	TEST2	-	Normally, set to "open".	113	HDATA6	I/O	CPU data bus signal		
75	TEST3			114	VDD			-	3.3V power supply
76	TEST4			115	HDATA5	I/O	CPU data bus signal		
77	TEST5			116	HDATA4				
78	SD7	I	Parallel data input	117	HDATA3	I/O	CPU data bus signal		
79	VDD	-	3.3V power supply	118	HDATA2				
80	SD6	I	Parallel data input	119	VSS	-	GND		
81	SD5			120	HDATA1	I/O	CPU data bus signal		
82	SD4			121	HDATA0		CPU data bus signal (LSB)		
83	SD3			122	BUSSEL	I	Bus width selection signal (0 : 8-bit bus, 1 : 16-bit bus)		
84	SD2			123	XOSDACK	I	OSD data acknowledge signal		
85	VSS	-	GND	124	XOSDREQ	O	OSD data request signal		
86	SD1	I	Parallel data input	125	HCPUSEL1	I	CPU selection signal (00 :SPARC, 01 :86 system, 10 :68 system, 11 :Reserve)		
87	SD0			126	HCPUSEL0				
88	XERR	I	Error input signal	127	XINT3	O	Interrupt request signal to the CPU		
89	XSACK	I	Acknowledge signal	128	XINT2				
90	XTEST	I	Set to "H" at normal use	129	XINT1				
91	SREQ	O	Data request signal	130	VSS	-	GND		

No.	Pin Name	I/O	Function	No.	Pin Name	I/O	Function
131	VDD	–	3.3V power supply	170	XMDRCAS	O	CAS signal for SDRAM
132	XINT0	O	Interrupt request signal to CPU	171	XMDRDQM1	O	Input mask / output enable signal for SDRAM
133	XEXTRDY	O	SPARC, 68 system : Ready signal to CPU 86 system : Acknowledge (ACK) signal to CPU	172	VSS	–	GND
134	HRW	I	CPU read / write signal	173	XMDRWE	O	Write enable signal for SDRAM
135	HCLKIN	I	Host clock input	174	XMDRDQM0	O	Input mask / output enable signal for SDRAM
136	XHCS	I	LSI chip select signal	175	MDRDAT8	I/O	Data bus signal for SDRAM
137	XHAS	I	SPARC, 68 system : CPU address strobe 86 system : CPU address status	176	VSS	–	GND
138	XHBE3	I	CPU byte enable signal	177	MDRDAT7	I/O	Data bus signal for SDRAM
139	XHBE2			178	MDRDAT9		
140	XHBE1			179	MDRDAT6		
141	XHBE0			180	MDRDAT10		
142	VSS	–	GND	181	MDRDAT5		
143	MDRADR4	O	Address signal for SDRAM	182	VSS	–	GND
144	MDRADR3			183	VDD	–	3.3V power supply
145	MDRADR5			184	MDRDAT11	I/O	Data bus signal for SDRAM
146	MDRADR2			185	MDRDAT4		
147	VDD	–	3.3V power supply	186	MDRDAT12		
148	VSS	–	GND	187	MDRDAT3		
149	MDRADR6	O	Address signal for SDRAM	188	MDRDAT13		
150	MDRADR1			189	VSS	–	GND
151	MDRADR7			190	MDRDAT2	I/O	Data bus signal for SDRAM
152	MDRADR0			191	MDRDAT14		
153	MDRADR8	192	MDRDAT1				
154	VSS	–	GND	193	MDRDAT15		Data bus signal for SDRAM (MSB)
155	TEST6	–	"L" status normally	194	MDRDAT0	I/O	Data bus signal for SDRAM (LSB)
156	TEST7			195	VSS	–	GND
157	TEST8			196	N.C.	–	Non connection
158	TEST9			197	ICK27M	I	System clock input
159	MDRADR10	O	Address signal for SDRAM	198	VSS	–	GND
160	MDRADR9			199	OCK27M	O	System clock output
161	MDRADR11			200	VSSA(VCO)	–	GND (for VCO only)
162	XMDRCS	O	Chip select signal for SDRAM	201	VDDA(VCO)	–	3.3V power supply (for VCO only)
163	MDRCKE	O	Clock enable signal for SDRAM	202	ILPF	O	PLL block inverter output for audio
164	VSS	–	GND	203	MLPF	I	PLL block inverter input for audio
165	VDD	–	3.3V power supply	204	OLPF	O	Phase detector output for audio
166	XMDRRAS	O	RAS signal for SDRAM	205	OVCO	I	VCO input for audio clock
167	MDRCLK	O	Clock output signal for SDRAM	206	VSS	–	GND
168	VSS	–	GND	207	XPLLRST	I	PLL section reset signal
169	MDRCLKIN	I	Clock input signal for SDRAM	208	XSYNCRST	I	SYNC reset signal

## ■ MB811171622A-100FN (DVDM ASSY : IC802)

• Code Buffer (16M bit SDRAM)

### ● Block Diagram



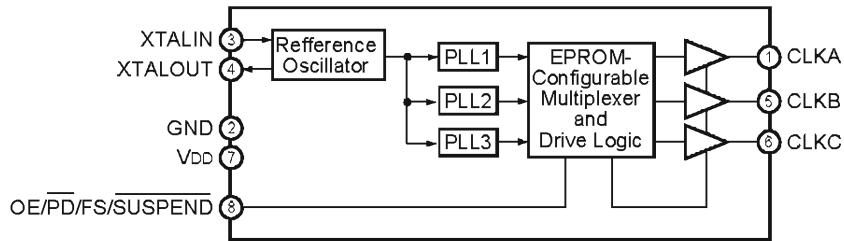
### ● Pin Function

No.	Pin Name	Function	No.	Pin Name	Function
1	VCC	Power supply (+ 3.3V)	26	VSS	Ground
2	DQ0	Data input/output	27	A4	Address input Row : A0 to A10 , Column : A0 to A7
3	DQ1		28	A5	
4	VSSQ	Ground	29	A6	
5	DQ2	Data input/output	30	A7	
6	DQ3		31	A8	
7	VCCQ	Power supply (+ 3.3V)	32	A9	
8	DQ4	Data input/output	33	DU	
9	DQ5		34	CKE	Clock enable
10	VSSQ	Ground	35	CLK	Clock input
11	DQ6	Data input/output	36	DQMU	Input mask / Output enable
12	DQ7		37	DU	Don't use (use for open)
13	VCCQ	Power supply (+ 3.3V)	38	VCCQ	Power supply (+ 3.3V)
14	DQML	Input mask / Output enable	39	DQ8	Data input/output
15	WE	Write enable	40	DQ9	
16	CAS	Column address strobe	41	VSSQ	Ground
17	RAS	Row address strobe	42	DQ10	Data input/output
18	CS	Chip select	43	DQ11	
19	A11 (BA)	Bank select	44	VCCQ	Power supply (+ 3.3V)
20	A10/AP	Address input Row : A0 to A10 , Column : A0 to A7 / Auto pre-charge enable	45	DQ12	Data input/output
21	A0	Address input Row : A0 to A10 , Column : A0 to A7	46	DQ13	
22	A1		47	VSSQ	Ground
23	A2		48	DQ14	Data input/output
24	A3		49	DQ15	
25	VCC	Power supply (+ 3.3V)	50	VSS	Ground

## ■ CY2081SL-611 (DVDM ASSY : IC813)

• Clock Generate IC

### • Block Diagram



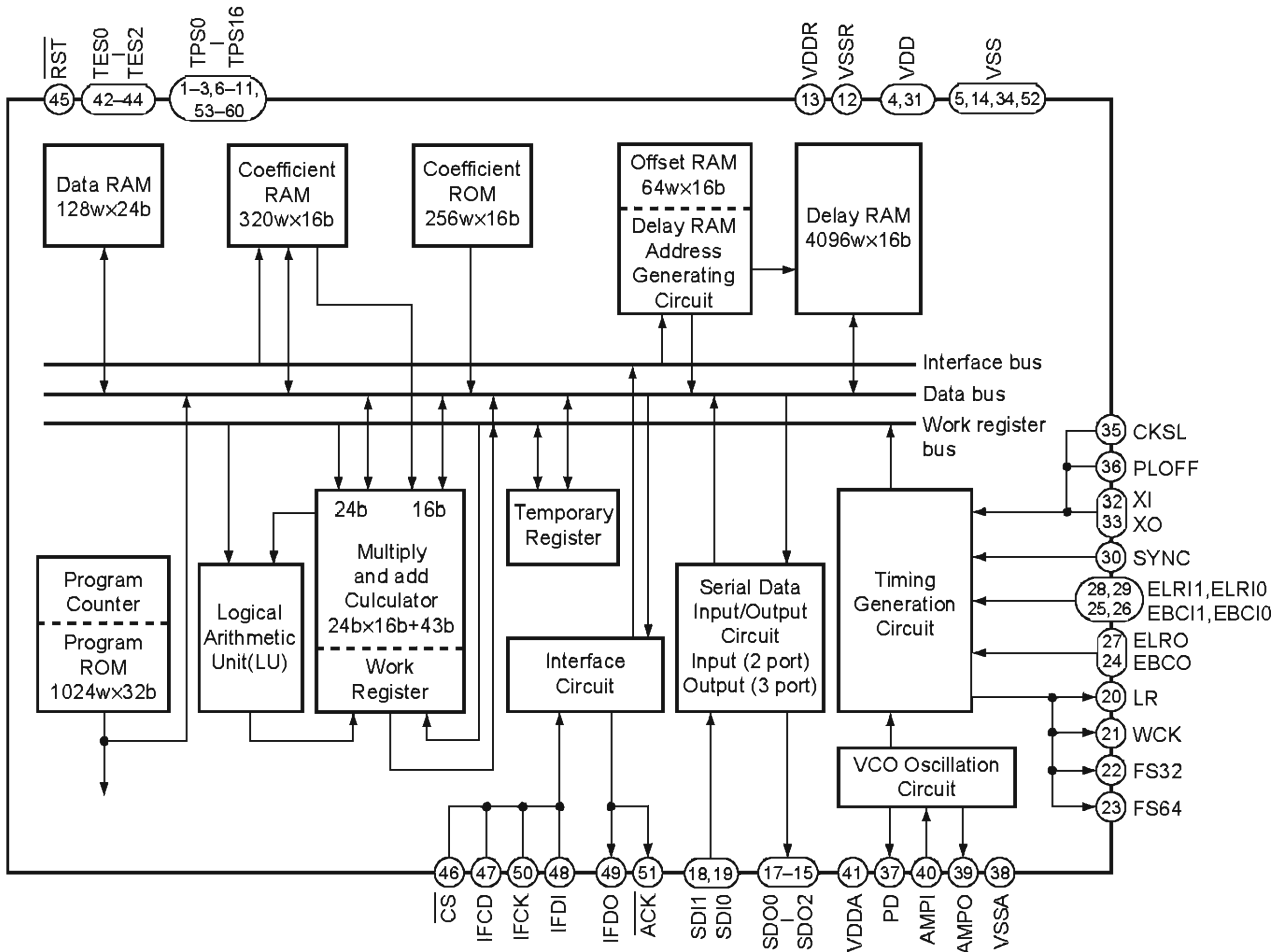
### • Pin Function

No.	Pin Name	Function
1	CLKA	Configurable clock output
2	GND	Ground
3	XTALIN	Reference crystal input or external reference clock input
4	XTALOUT	Reference crystal feedback
5	CLKB	Configurable clock output
6	CLKC	Configurable clock output
7	VDD	Voltage supply
8	OE/PD/FS/SUSPEND	Output control pin Either active-High output enable, active-Low power down, CLKA frequency select, or active-Low suspend input

## ■ PD2058A ( DVDM ASSY : IC901 )

• Digital Signal Processor For Audio

### • Block Diagram



### • Pin Function

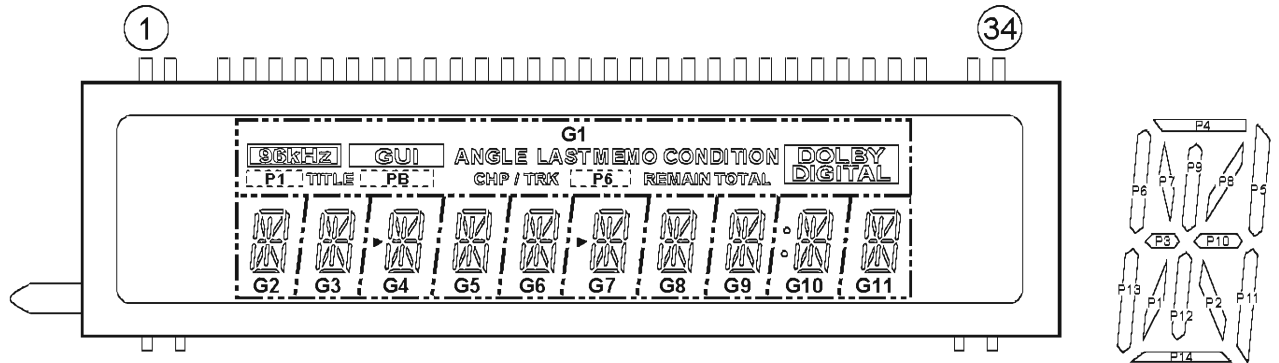
No.	Pin Name	I/O	Function
1	TP8	○	Test data output pin Normally, use with open.
2	TP7		
3	TP6		
4	VDD	-	Power supply pin
5	VSS	-	Ground pin
6	TP5	○	Test data output pin Normally, use with open.
7	TP4		
8	TP3		
9	TP2		
10	TP1		
11	TP0		

No.	Pin Name	I/O	Function	
12	VSSR	–	Ground pin for internal delay RAM (DLRAM)	
13	VDDR	–	Power supply pin for internal delay RAM (DLRAM)	
14	VSS	–	Ground pin	
15	SDO2	O	Serial data output pin Output data length is able to select the 24-bit or 16-bit by controlling the microprocessor.	
16	SDO1			
17	SDO0			
18	SDI1	I	Serial data input pin Input data length is able to select the 24-bit or 16-bit by controlling the microprocessor.	
19	SDI0			
20	LR	O	LR clock output pin (1 fs)	
21	WCK	O	Word clock output pin (2 fs)	
22	FS32	O	Bit clock output pin (32 fs)	
23	FS64	O	Bit clock output pin (64 fs)	
24	EBC0	I	Bit clock input pin Inputs shift clock for SDO0/1/2 data output.	
25	EBC1	I	Bit clock input pin Inputs shift clock for SDI0/1 data input.	For SDI1 data input
26	EBC10			For SDI0 data input
27	ELRO	I	LR clock input pin Inputs LR clock for SDO0/1/2 data output.	
28	ELRI1	I	LR clock input pin Inputs LR clock for SDI0/1 data input.	For SDI1 data input
29	ELRI0			For SDI0 data input
30	SYNC	I	Sync. signal input pin Turn the program counter into "0" forcibly by the edge of SYNC signal. Moreover, set the polarity by controlling the microprocessor.	
31	VDD	–	Power supply pin	
32	XI	I	Crystal oscillator connection pin / external clock input pin	
33	XO	O	Crystal oscillator connection pin	
34	VSS	–	Ground pin	
35	CKSL	I	Oscillation clock switch pin L : correspond to 384 fs H : correspond to 512 fs	
36	PLOFF	I	X'tal oscillation mode / VCO oscillation mode switch pin L :built-in VCO oscillation mode H :X'tal oscillation mode	
37	PD	O	Phase comparison data output pin	
38	VSSA	–	Analog ground pin	
39	AMPO	O	Amp. output pin for low-pass filter	
40	AMPI	I	Amp. input pin for low-pass filter	
41	VDDA	–	Analog power supply pin	
42	TES0	I	Test pin Normally, use for "H" or open.	
43	TES1			
44	TES2			
45	$\overline{\text{RST}}$	I	Reset signal input pin	
46	$\overline{\text{CS}}$	I	Chip select signal input pin When $\overline{\text{CS}}$ is L active, data is able to transfer from the microprocessor.	
47	IFCD	I	Command or data input mode selection pin from the microprocessor Recognize the command for "H" period and the data for "L" period.	
48	IFDI	I	Microprocessor data input pin Receive the command and data by LSB first.	
49	IFDO	O	Data output pin of data bus (DBUS) Transmit the data of data bus to the microprocessor by LSB first.	
50	IFCK	I	Shift clock input pin for microprocessor data	
51	$\overline{\text{ACK}}$	O	Acknowledge signal output pin for microprocessor When parity of command and data is OK, outputs the acknowledge signal.	
52	VSS	–	Ground pin	
53	TP16	O	Test data output pin Normally, use with open.	
54	TP15			
55	TP14			
56	TP13			
57	TP12			
58	TP11			
59	TP10			
60	TP9			

## 4. FL INFORMATION

### ■ VAW1046 (FLKB ASSY : V101)

#### • FL DISPLAY



#### • ANODE AND GRID ASSIGNMENT

	G1	G2	G3	G4	G5	G6	G7	G8	G9	G10	G11
P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1
P2	ANGLE	P2	P2	P2	P2	P2	P2	P2	P2	P2	P2
P3	TITLE	P3	P3	P3	P3	P3	P3	P3	P3	P3	P3
P4	LAST MEMO	P4	P4	P4	P4	P4	P4	P4	P4	P4	P4
P5	CONDITION	P5	P5	P5	P5	P5	P5	P5	P5	P5	P5
P6	P6	P6	P6	P6	P6	P6	P6	P6	P6	P6	P6
P7	CHP/TRK	P7	P7	P7	P7	P7	P7	P7	P7	P7	P7
P8	P8	P8	P8	P8	P8	P8	P8	P8	P8	P8	P8
P9	REMAIN	P9	P9	P9	P9	P9	P9	P9	P9	P9	P9
P10	DOLBY DIGITAL	P10	P10	P10	P10	P10	P10	P10	P10	P10	P10
P11	GUI	P11	P11	P11	P11	P11	P11	P11	P11	P11	P11
P12	96kHz	P12	P12	P12	P12	P12	P12	P12	P12	P12	P12
P13		P13	P13	P13	P13	P13	P13	P13	P13	P13	P13
P14		P14	P14	P14	P14	P14	P14	P14	P14	P14	P14
P15	TOTAL										

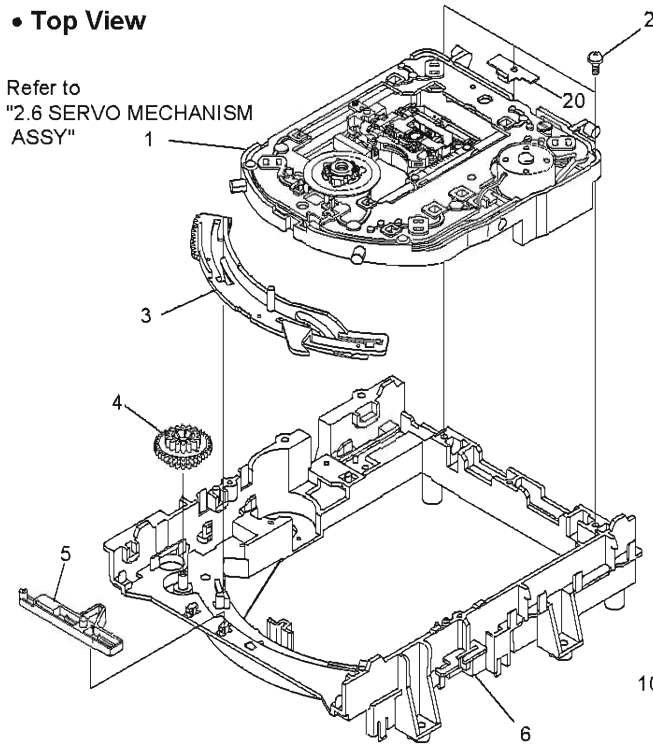
#### • PIN ASSIGNMENT

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Assignment	F1	F1	NP	P15	P14	P13	P12	P11	P10	P9	P8	P7	P6	P5	P4	P3	P2
Pin No.	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34
Assignment	P1	G11	G10	G9	G8	NL	NL	G7	G6	G5	G4	G3	G2	G1	NP	F2	F2

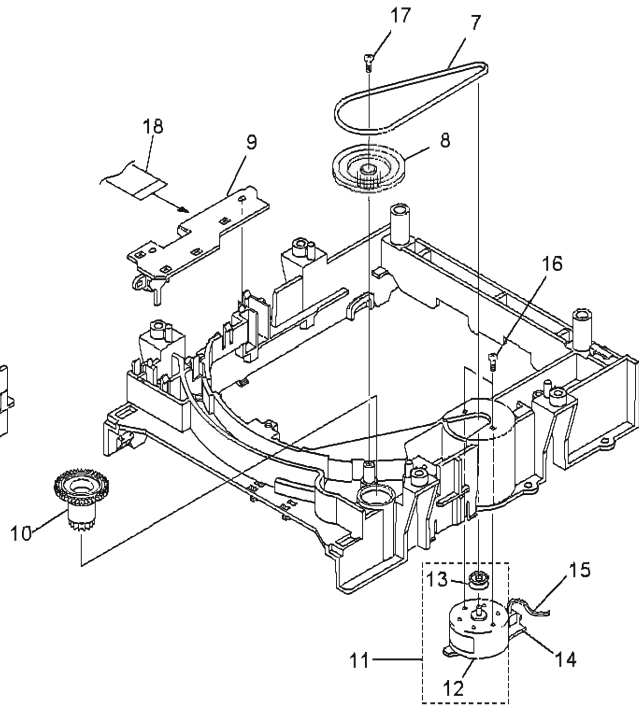
F1, F2 : Filament      G1~G11 : Grid      P1~P15 : Anode      NP : No Pin      NL : No Lead

## 2.5 LOADING MECHANISM ASSY

### • Top View



### • Bottom View



### • LOADING MECHANISM ASSY PARTS LIST

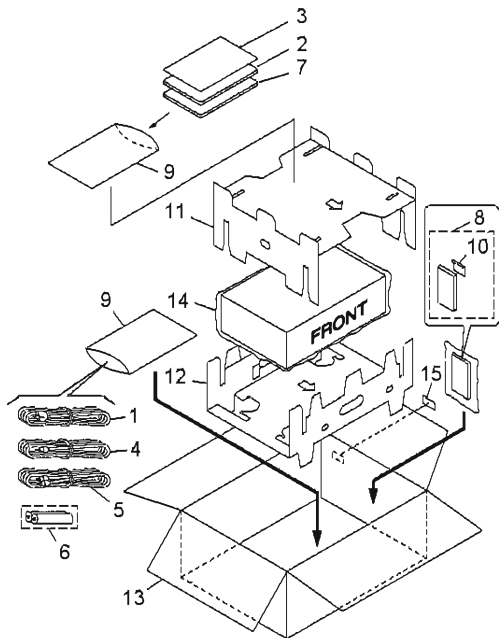
Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Servo Mechanism Assy-S	PIVXX2538		11	Loading Motor Assy	PIVXX2505
	2	Screw	PIDBA1006		12	DC Motor	PIPX1027
	3	Drive Cam	PIVNL1736		13	Motor Pulley	PIP1634
	4	Drive Gear	PIVNL1735		14	LOMB Assy	PIVWG1886
	5	Lock Plate	PIVNL1737	NSP	15	Connector Assy (2P) (LOMB CN401 – LOSB CN303)	PIPG02KK-E35
	6	Loading Base	PIVNL1730		16	Screw	PIVBA1055
	7	Rubber Belt	PIVEB1260		17	Screw	PIZ39-019
	8	Gear Pulley	PIVNL1733		18	Flexible Cable (8P) (LOSB CN302 – INSB CN202)	PIVDA1649
NSP	9	LOSB Assy	PIVWG1885		19	•••••	
	10	Loading Gear	PIVNL1734		20	Stopper	PIDNH2076



## 2. EXPLODED VIEWS AND PARTS LIST

- NOTES: ● Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.  
 ● The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.  
 ● Screws adjacent to  $\nabla$  mark on the product are used for disassembly.

### 2.1 PACKING



### (1) PACKING PARTS LIST

Mark	No.	Description	Part No.
$\Delta$	1	Power Cord	PIADG1154
	2	Operating Instructions (English/French/German/Italian))	PIVRE1075
	3	Caution	PIVRR1037
	4	Audio Cord (L=1.5m)	PIVDE1033
	5	Video Cord (L=1.5m)	PIVDE1048
NSP	6	Dry Cell Battery (R6P, AA)	PIVEM-013
	7	Operating Instructions (Spanish/Portuguese/Dutch/Swedish)	PIVRF1046
	8	Remote Control Unit	PIVXX2595
	9	Polyethylene Bag	PIVHL1046
	10	Battery Cover	PIVNK3703
	11	Protector A	PIVHB1060
	12	Protector B	PIVHB1061
	13	Packing Case	PIVHG1765
	14	Mirror Mat Sheet	PIZ23-007
	15	Serial Number Label	PIRRW-168

## 5. PCB PARTS LIST

- NOTES: ● Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
- The  $\Delta$  mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- When ordering resistors, first convert resistance values into code form as shown in the following examples.
- Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
- |              |               |                  |               |           |         |   |   |   |   |
|--------------|---------------|------------------|---------------|-----------|---------|---|---|---|---|
| 560 $\Omega$ | $\rightarrow$ | $56 \times 10^1$ | $\rightarrow$ | 561 ..... | RD1/4PU | 5 | 6 | 1 | J |
| 47k $\Omega$ | $\rightarrow$ | $47 \times 10^3$ | $\rightarrow$ | 473 ..... | RD1/4PU | 4 | 7 | 3 | J |
| 0.5 $\Omega$ | $\rightarrow$ | R50 .....        |               |           | RN2H    | R | 5 | 0 | K |
| 1 $\Omega$   | $\rightarrow$ | 1R0 .....        |               |           | RS1P    | 1 | R | 0 | K |
- Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
- |                |               |                   |               |            |         |   |   |   |   |   |
|----------------|---------------|-------------------|---------------|------------|---------|---|---|---|---|---|
| 5.62k $\Omega$ | $\rightarrow$ | $562 \times 10^1$ | $\rightarrow$ | 5621 ..... | RN1/4PC | 5 | 6 | 2 | 1 | F |
|----------------|---------------|-------------------|---------------|------------|---------|---|---|---|---|---|

### 5.1 LIST OF WHOLE PCB ASSEMBLIES

Mark	Symbol and Description	Part No.		Remarks
		DV-P2E		
NSP	LOAB ASSY	PIVWM1798		
NSP	└ LOMB ASSY	PIVWG1886		
NSP	└ LOSB ASSY	PIVWG1885		
NSP	SMEB ASSY	PIVWM1797		
NSP	└ INSB ASSY	PIVWG1883		
NSP	└ FGSB ASSY	PIVWG1884		
NSP	FLKY ASSY	PIVWM1792		
NSP	└ FLKB ASSY	PIVWG1876		
NSP	└ PWSB ASSY	PIVWG1937		
NSP	└ DILB ASSY	PIVWG1881		
NSP	JKSB ASSY	PIVWM1796		
	└ AVJB ASSY	PIVWV1575		
	└ MSWB ASSY	PIVWG1882		
$\Delta$	DVDM ASSY	PIVWS1371		
	POWER SUPPLY ASSY	PIVWR1285		
	SCCB ASSY	PIVWV1577		

## 5.2 PARTS LIST FOR DV-P2E

Mark	No.	Description	Part No.
<b>LOAB ASSY</b>			
<b>OTHERS</b>			
		PC BOARD LOAB	PIVNP1628

Mark	No.	Description	Part No.
<b>A LOMB ASSY</b>			
<b>OTHERS</b>			
		CN401 KR CONNECTOR	PIB2B-PH-K-S

Mark	No.	Description	Part No.
<b>B LOSB ASSY</b>			
<b>SWITCH</b>			
	S301		PIVSK1011
<b>OTHERS</b>			
	CN303	KR CONNECTOR	PIB2B-PH-K-S
	CN302	8P FFC CONNECTOR	PIVKN1268
	CN301	12P FFC CONNECTOR	PIVKN1272

Mark	No.	Description	Part No.
<b>SMEB ASSY</b>			
<b>OTHERS</b>			
		PC BOARD SMEB	PIVNP1627

Mark	No.	Description	Part No.
<b>C INSB ASSY</b>			
<b>SWITCH</b>			
	S201		PIDSG1017
<b>OTHERS</b>			
	CN201	KR CONNECTOR 3P PCB BINDER	PIB3B-PH-K-S PIDEF1012
	CN202	8P FFC CONNECTOR	PIVKN1239

Mark	No.	Description	Part No.
<b>D FGSB ASSY</b>			
<b>SEMICONDUCTOR</b>			
	PC101		PIGP2S27(B)

Mark	No.	Description	Part No.
<b>RESISTORS</b>			
		All Resistors	PIRS1/10S□□□J

Mark	No.	Description	Part No.
<b>OTHERS</b>			
	CN101	KR CONNECTOR 3P	PIB3B-PH-K-S

Mark	No.	Description	Part No.
<b>E FLKB ASSY</b>			
<b>SEMICONDUCTORS</b>			
	IC101		PIPD4890A
	IC102		PIS-806D
	Q103		PIDTD113ES
	D112		PIEP05Q04

Mark	No.	Description	Part No.
<b>SWITCHES</b>			
	S102-S106		PIRSG1030

Mark	No.	Description	Part No.
<b>CAPACITORS</b>			
	C101,C102		PICEJA470M6R3
	C117,C125-C128		PICKSQYB102K50
	C111-C114		PICKSQYF104Z25

Mark	No.	Description	Part No.
<b>RESISTORS</b>			
		All Resistors	PIRS1/10S□□□J

Mark	No.	Description	Part No.
<b>OTHERS</b>			
	CN103	FJ CONNECTOR 4P	PI04P-FJ
	CN102	FJ CONNECTOR 6P	PI06P-FJ
		REMOTE RECEIVER UNIT	PIGP1U28X
	V101	FL TUBE SPACER	PIVAW1046 PIVEC1599
	CN101	14P FFC CONNECTOR FL HOLDER	PIVKN1274 PIVNF1087
	X101	CERAMIC RESONATOR (5MHz)	PIVSS1104

Mark	No.	Description	Part No.
<b>F</b>		<b>PWSB ASSY</b>	
		<b>SEMICONDUCTORS</b>	
	Q201		PIPDTA124EK
	D202		PISLP4118C51H
	D201		PISLP9118C51H
		<b>SWITCH</b>	
	S202		PIRSG1030
		<b>RESISTORS</b>	
	All Resistors		PIRS1/10S□□□J
		<b>OTHERS</b>	
	CN201	FJ CONNECTOR 6P	PI06R-FJ

Mark	No.	Description	Part No.
<b>G</b>		<b>DILB ASSY</b>	
		<b>SEMICONDUCTOR</b>	
	D301		PIMA111
		<b>OTHERS</b>	
	CN301	FJ CONNECTOR 4P	PI04R-FJ
	PL301	LAMP (DVD ILUM.)	PIVEL1022

Mark	No.	Description	Part No.
<b>H</b>		<b>DVDM ASSY</b>	
		<b>SEMICONDUCTORS</b>	
	IC171		PIBA10393F
	IC161		PIBA6195FP
	IC151		PIBA6797FP
	IC813		PICY2081SL-611
	IC702		PIHM514800CJ-7
	IC101		PILA9700M
	IC201		PILC78650NE
	IC802		PIMB811171622A-100FN
	IC801		PIMB86371
	IC815,IC816		PIMC14577CF
	IC271,IC302		PINJM2100M
	IC203		PINJM2107F
	IC901		PIPD2058A
	IC601		PIPD3381A
	IC701		PIPD4833A
	IC501		PIPD4889A
	IC502		PISRM2B256SLMX70
△	IC401		PITA78M08F
	IC202,IC204,IC206,IC902		PITC4W53F
	IC604		PITC551001BFL-85
	IC503		PITC74HC573AF
	IC804		PITC74HCT541AF
	IC303		PITC74HCU04AF
	IC807,IC808		PITC74LCX245FT
	IC821		PITC74VHC00FT
	IC814,IC820		PITC74VHC02FT
	IC505,IC605		PITC74VHC139FT
	IC504		PITC74VHC20FT
	IC805,IC806,IC809		PITC74VHC541FT
	IC506		PITC74VHCT245AFT

Mark	No.	Description	Part No.
	IC817		PITC74VHCT541AFT
	IC811,IC818,IC819		PITC7SHU04F
	IC810		PITC7WU04F
	IC301		PITLC5540INS
	IC603		PIVYW1602
△	Q401		PI2SB1260
	Q108		PIHN1K03FU
	Q455,Q831,Q832,Q851,Q852		PIIMT1A
	Q871,Q872		PIIMT1A
	Q103,Q402,Q873		PIIMX1
	Q102,Q104,Q291,Q301		PIIMZ1A
	Q106,Q603		PIPDTA114EK
	Q107,Q109,Q261,Q602		PIPDTC114EK
	Q601,Q771,Q772		PIPDTC114TK
	D301		PIKV1410
	D171,D172		PIMA152WK
	D601		PIRB501V-40

Mark	No.	Description	Part No.
		<b>COILS AND FILTERS</b>	
	F771,F778,F779	CHIP BEAD	PIDTF1067
	L941,L942,L945,L946	CHIP SOLID INDUCTOR	PIQTL1011
	F896	FERRITE BEAD	PIVTF1077
	F801	VIDEO FILTER	PIVTF1098
	F401-F406	CHIP EMI FILTER	PIVTH1037
	L301	CHIP COIL (1.5mH)	PIVTL1059
	L101,L302	CHIP COIL (10mH)	PIVTL1061
	L802,L803	CHIP COIL	PIVTL1067
	L335,L340,L342	CHIP BEAD	PIVTL1074
	L777,L780-L787,L895	CHIP BEAD	PIVTL1075
	L897-L899	CHIP BEAD	PIVTL1075

Mark	No.	Description	Part No.
		<b>CAPACITORS</b>	
	C623		PICCSRCH100D50
	C152,C208,C291,C612,C613		PICCSRCH101J50
	C700,C735,C737,C739		PICCSRCH101J50
	C897,C898		PICCSRCH101J50
	C111,C139,C215,C231,C232		PICCSRCH151J50
	C248		PICCSRCH151J50
	C125,C148,C329		PICCSRCH180J50
	C112,C118		PICCSRCH220J50
	C121,C130,C199,C319,C324		PICCSRCH330J50
	C120		PICCSRCH331J50
	C310,C323,C327		PICCSRCH470J50
	C230		PICCSRCH471J50
	C126,C331,C838		PICCSRCH560J50
	C127,C330,C863,C873,C882		PICCSRCH5R0C50
	C160		PICCSRCH680J50
	C401		PICEV101M10
	C101,C104,C201,C325,C601		PICEV101M6R3
	C701,C704,C706,C801		PICEV101M6R3
	C803,C804,C813-C815,C826		PICEV101M6R3
	C901		PICEV101M6R3
	C123,C158,C264,C412,C414		PICEV220M16
	C835,C895		PICEV221M4
	C131,C135,C205,C206,C301		PICEV470M6R3
	C303,C404,C406,C408,C410		PICEV470M6R3
	C501,C504,C832,C836,C841		PICEV470M6R3

Mark	No.	Description	Part No.
	C887		PICEV470M6R3
	C211		PICKSQYB104K25
	C109,C124,C216,C220,C229		PICKSQYB105K10
	C234,C261,C275,C308,C326		PICKSQYB105K10
	C332,C333,C730,C731		PICKSQYB105K10
	C818,C823,C828		PICKSQYF105Z16
	C213,C292,C309,C321		PICKSRYB102K50
	C105,C106,C108,C146,C147		PICKSRYB103K50
	C151,C154-C157,C161,C207		PICKSRYB103K50
	C217,C221,C247,C263,C265		PICKSRYB103K50
	C276,C318,C320,C620,C705		PICKSRYB103K50
	C722,C772,C859		PICKSRYB103K50
	C143,C162-C165,C223,C224		PICKSRYB104K16
	C242,C273,C274,C311,C312		PICKSRYB104K16
	C315		PICKSRYB104K16
	C141		PICKSRYB222K50
	C328		PICKSRYB223K25
	C262,C271		PICKSRYB472K50
	C122		PICKSRYB473K16
	C102,C103,C113,C129		PICKSRYF104Z16
	C132-C134,C136,C137,C159		PICKSRYF104Z16
	C166,C191,C202-C204,C209		PICKSRYF104Z16
	C214,C218,C219,C222		PICKSRYF104Z16
	C226-C228,C235,C237,C241		PICKSRYF104Z16
	C246,C302,C304,C305,C317		PICKSRYF104Z16
	C322,C402,C403,C405,C407		PICKSRYF104Z16
	C409,C411,C413,C415		PICKSRYF104Z16
	C502,C503,C505-C509		PICKSRYF104Z16
	C602-C605,C608-C611		PICKSRYF104Z16
	C614,C615,C617,C621,C622		PICKSRYF104Z16
	C702,C703,C707-C721		PICKSRYF104Z16
	C732-C734,C736,C738		PICKSRYF104Z16
	C740-C742,C771,C791,C800		PICKSRYF104Z16
	C802,C805-C812,C816,C817		PICKSRYF104Z16
	C819-C822,C824,C825,C827		PICKSRYF104Z16
	C829,C830,C833,C834,C837		PICKSRYF104Z16
	C839,C840,C842-C848		PICKSRYF104Z16
	C861,C862,C867,C871,C872		PICKSRYF104Z16
	C876,C878,C881,C883		PICKSRYF104Z16
	C888-C890,C902-C905,C911		PICKSRYF104Z16
	C852,C855,C857 (2.2μF/6.3V)		PIVCG1030
	C858,C922-C924 (2.2μF/6.3V)		PIVCG1030
	VC301 (40pF)		PIVCM1010

## RESISTORS

R752	PIRA4C101J
R507,R508,R624,R628,R633	PIRA4C103J
R703,R704,R717,R718	PIRA4C103J
R745,R746,R761,R762,R792	PIRA4C103J
R812,R813	PIRA4C103J
R137,R501,R502,R505,R506	PIRA4C220J
R604-R607,R712,R713,R719	PIRA4C220J
R724,R748,R749,R791	PIRA4C220J
R802,R803,R808	PIRA4C220J
R602,R603,R610,R613,R618	PIRA4C470J
R101,R11-R14,R141	PIRS1/10S0R0J
R15-R17,R171,R18	PIRS1/10S0R0J
R201-R203,R266,R300,R319	PIRS1/10S0R0J
R333,R411-R413,R701	PIRS1/10S0R0J
R775,R776,R891,R893	PIRS1/10S0R0J

Mark	No.	Description	Part No.
	R920,R921,R935,R936,R961		PIRS1/10S0R0J
	R205		PIRS1/10S101J
	R835,R839,R855,R859,R875		PIRS1/16S1001F
	R881		PIRS1/16S1001F
	R834,R854,R874		PIRS1/16S1201F
	R823-R825		PIRS1/16S1500F
	R117,R118		PIRS1/16S1501F
	R126		PIRS1/16S1502F
	R241,R247		PIRS1/16S2202F
	R110,R153,R155,R173,R174		PIRS1/16S2702F
	R213,R228,R229,R248		PIRS1/16S2702F
	R152,R156,R158-R164		PIRS1/16S4702F
	R167-R170,R172,R175,R194		PIRS1/16S4702F
	R227		PIRS1/16S4702F
	VR801 (1kΩ)		PIVCP1125
	Other Resistors		PIRS1/16S□□□□

## OTHERS

CN101	PH CONNECTOR	PIS14B-PH-SM3
CN801	PH CONNECTOR	PIS4B-PH-SM3
TP100,TP200,TP300,TP400	CHECKER CHIP	PIVKF1001
CN201	B TO B CONNECTOR 14P	PIVKN1324
CN106	7P FFC CONNECTOR	PIVKN1411
CN107	12P FFC CONNECTOR	PIVKN1416
CN105,CN803	14P FFC CONNECTOR	PIVKN1418
CN802	17P FFC CONNECTOR	PIVKN1421
CN102	20P FFC CONNECTOR	PIVKN1445
KN1-KN3	EARTH METAL LABEL	PIVNF1109
X602	CHIP CERAMIC RESONATOR (20MHz)	PIVRW1634
X501	CHIP CERAMIC RESONATOR (10MHz)	PIVSS1115
X901	CHIP CERAMIC RESONATOR (24MHz)	PIVSS1118
IC SOCKET FOR IC603		PIVKH1012

## AVJB ASSY SEMICONDUCTORS

IC102,IC201	PIBA4560F
IC191	PIPD0236AM
IC101	PIPD2029A(L)
IC901	PITC74HCU04AF
IC304-IC306	PITC7S02F
IC303	PITC7S04F
IC301,IC302	PITC7WU04F
Q123,Q223	PI2PB709A
Q514	PI2PD601A
Q501,Q502,Q601,Q602	PI2SC1740S
Q124,Q224	PI2SD2114K
Q523,Q524	PIPDTA124EK
Q121,Q122,Q221,Q222	PIPDTC124EK
Q521,Q522	PIPDTC124EK
D401,D501,D601	PIMA111
D113	PIUDZS6.2B

Mark	No.	Description	Part No.
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### COILS

L101,L191,L201,L301,L801	PILAU220J
L901	PILAU220J
L903 PULSE TRANS.	PIPTL1003
L902 NOISE FILTER	PIRTF1167
L302,L303 CHIP BEAD	PIVTL1098

### SWITCH

S30	PIVSH1020
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### CAPACITORS

C103,C203	PICCSQCH820J50
C310,C322	PICCSQCH120J50
C320	PICCSQCH270J50
C311	PICCSQCH330J50
C106,C111,C206,C211	PICCSQCH470J50

C307,C308	PICCSQCH470J50
C114,C191,C193,C801,C901	PICEAT101M10
C903	PICEAT101M10
C503,C603	PICEAT102M6R3
C300	PICEAT470M16

C101,C201	PICEAT471M16
C107,C207	PICEGA470M25
C104,C113,C204	PICEZA470M25
C112,C212,C224,C904	PICKSQYF103Z50
C102,C105,C115,C192,C202	PICKSQYF104Z25

C205,C228,C301-C306,C309	PICKSQYF104Z25
C321,C333,C401,C502,C511	PICKSQYF104Z25
C516,C602,C802,C902,C906	PICKSQYF104Z25
C911-C913	PICKSQYF104Z25
C108,C208	PICQ MBA332J50
VC301 (20pF)	PIVCM-008

### RESISTORS

R508,R518,R607	PIRN1/10SC75R0D
R106,R111,R206,R211	PIRN1/10SE4702D
Other Resistors	PIRS1/10S□□□J

### OTHERS

CN501	4P MINI DIN SOCKET	PIAKP7008
CN301	KR CONNECTOR	PIB4B-PH-K-S
JA101	4P PIN JACK	PIDKB1038
JA801	OPTICAL MODULE	PIGPIF32T
JA401	REMOTE CONTROL JACK	PIRKN1004

	PCB BINDER	PIVEF1040
JA601	1P PIN JACK	PIVKB1063
JA901	1P PIN JACK (NI,BLK)	PIVKB1077
CN19	8P FFC CONNECTOR	PIVKN1239
CN191	14P FFC CONNECTOR	PIVKN1245

CN901	17P FFC CONNECTOR	PIVKN1248
	SCREW TERMINAL	PIVNE1948
KN301	EARTH METAL	PIVNF1084
X302	CRYSTAL (16MHz)	PIVSS1081
X301	CRYSTAL (18.432MHz)	PIVSS1116

Mark	No.	Description	Part No.
------	-----	-------------	----------

## J POWER SUPPLY ASSY

### SEMICONDUCTORS

△	IC201	PIAN1431T
△	IC411	PIVZF1048
△	IC711	PIVZF1060
△	Q101,Q103	PIVZF1062
△	Q102	PI2SC3377

	Q511	PI2SC1740S
△	D511	PI10ELS2
	D512,D514	PI1SS270A
△	D105	PI1SS270A
△	D104	PIMTZJ2.4B

	D513	PIMTZJ8.2B
△	D106	PIPS2561L1-1VM
△	D103	PIRD18FB2
△	D311	PI3L20U
△	D101	PIVZF1044

△	D108,D110	PIVZF1045
△	D211	PIVZF1058
△	D411	PIVZF1059
△	D212	PIVZF1061

### OTHERS

△	P311	FUSE (1A)	PIVEK1041
△	P211	FUSE (1.5A)	PIVEK1048
△	F101	FUSE (2A)	PIVEK1049

## K MSWB ASSY

### SWITCH

△	S10	PIASG1006
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### CAPACITOR

△	C10 (0.01μ/AC250V)	PIACG7010
---	--------------------	-----------

### OTHERS

CN10	AC CORD SOCKET	PIRKP1751
------	----------------	-----------

## L SCCB ASSY

### SEMICONDUCTORS

	Q100	PI2SA933S
	Q107,Q108	PIPDTC124EK
	D114	PIMA111
	D101,D103	PIUDZS5.1B

### CAPACITORS

	C110,C126	PICCSQCH271J50
	C106,C116,C125,C128	PICKSQYF104Z25

### RESISTORS

	R109	PIRN1/10SC75R0D
	Other Resistors	PIRS1/10S□□□J

### OTHERS

	PCB BINDER	PIVEF1040
JA100	RGB CONNECTOR	PIVKB1037
CN100	8P FFC CONNECTOR	PIVKN1239
	PC BOARD (SCCB)	PIVNP1629

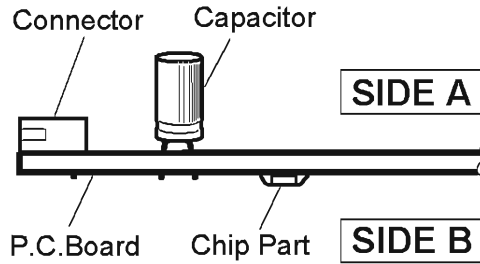
# 4. PCB CONNECTION DIAGRAM

## NOTE FOR PCB DIAGRAMS :

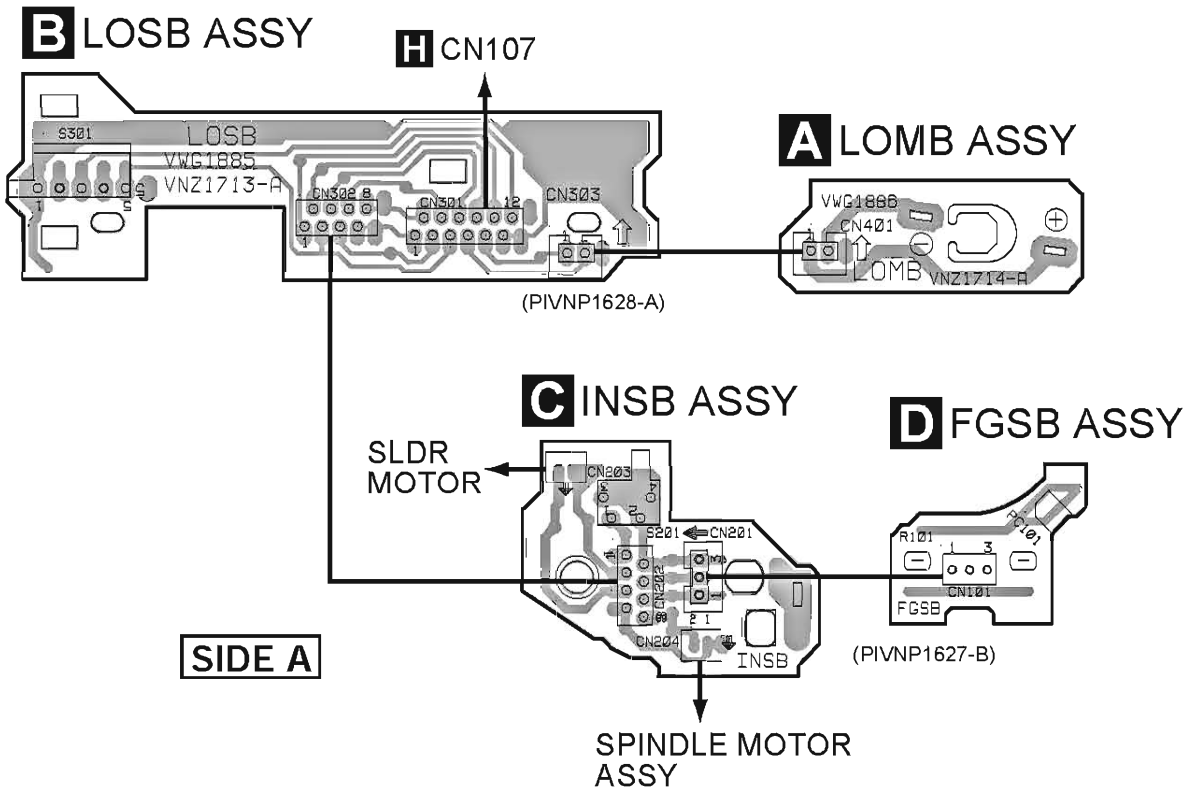
1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

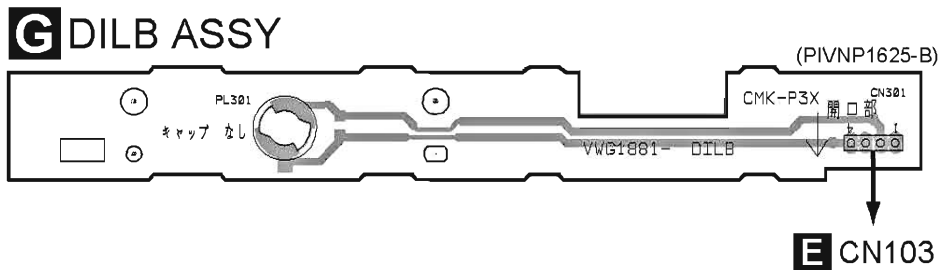
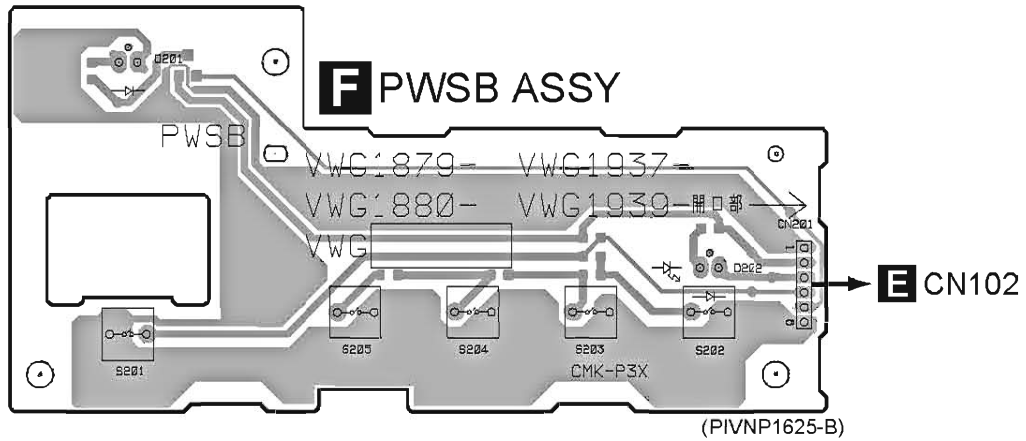
3. The parts mounted on this PCB include all necessary parts for several destinations.
- For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



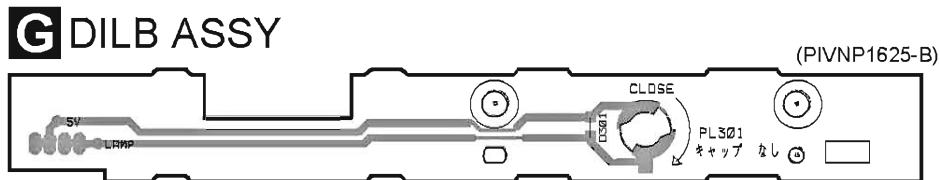
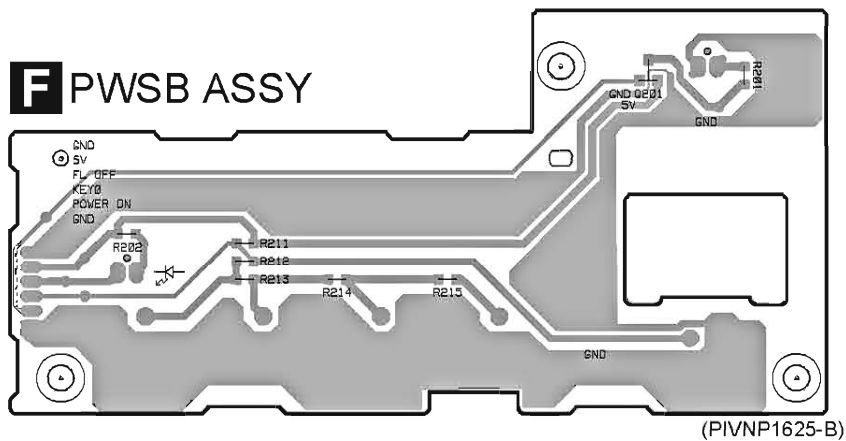
## 4.1 LOMB, LOSB, INSB AND FGSB ASSEMBLIES



### 4.2 PWSB AND DILB ASSEMBLIES



**SIDE A**



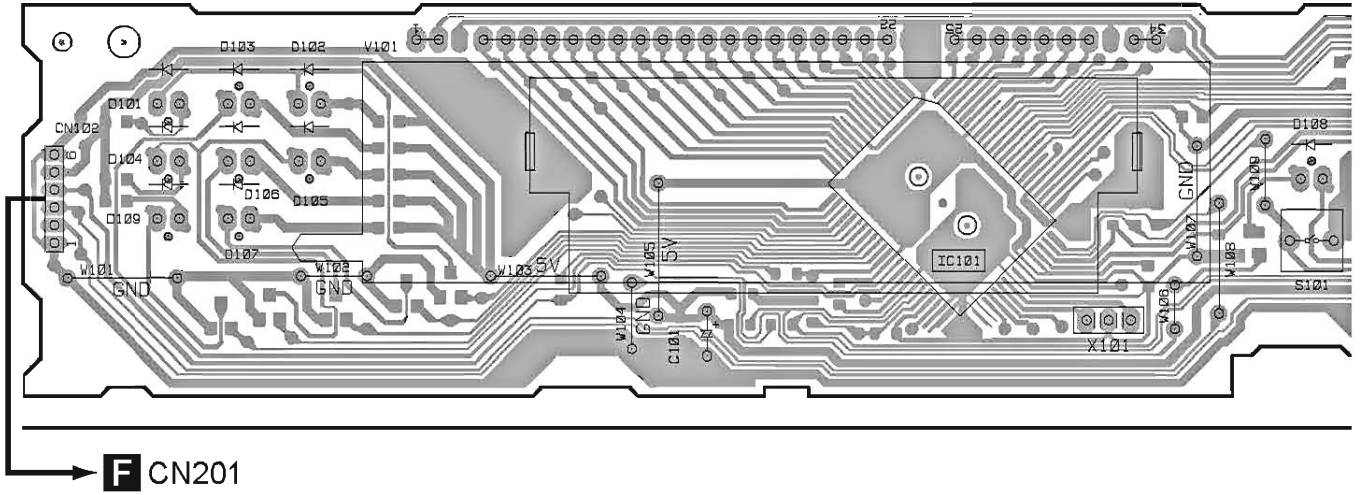
**SIDE B**



### 4.3 FLKB ASSY

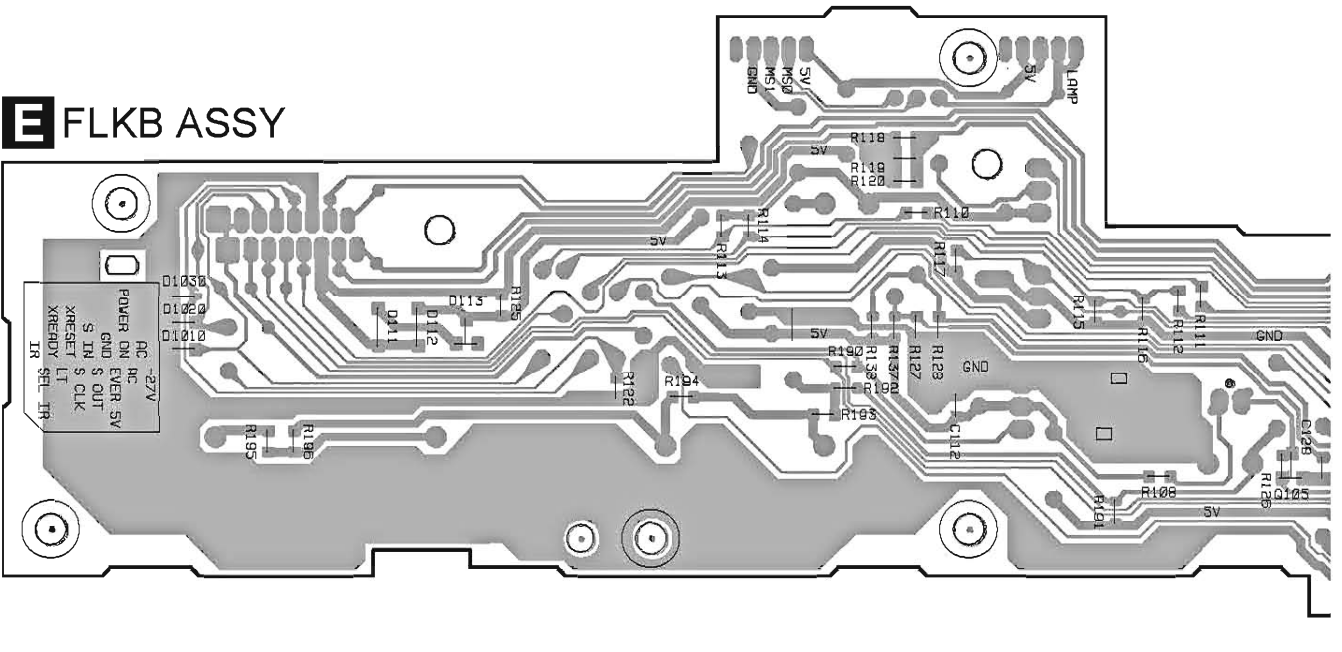
**SIDE A**

#### **E** FLKB ASSY



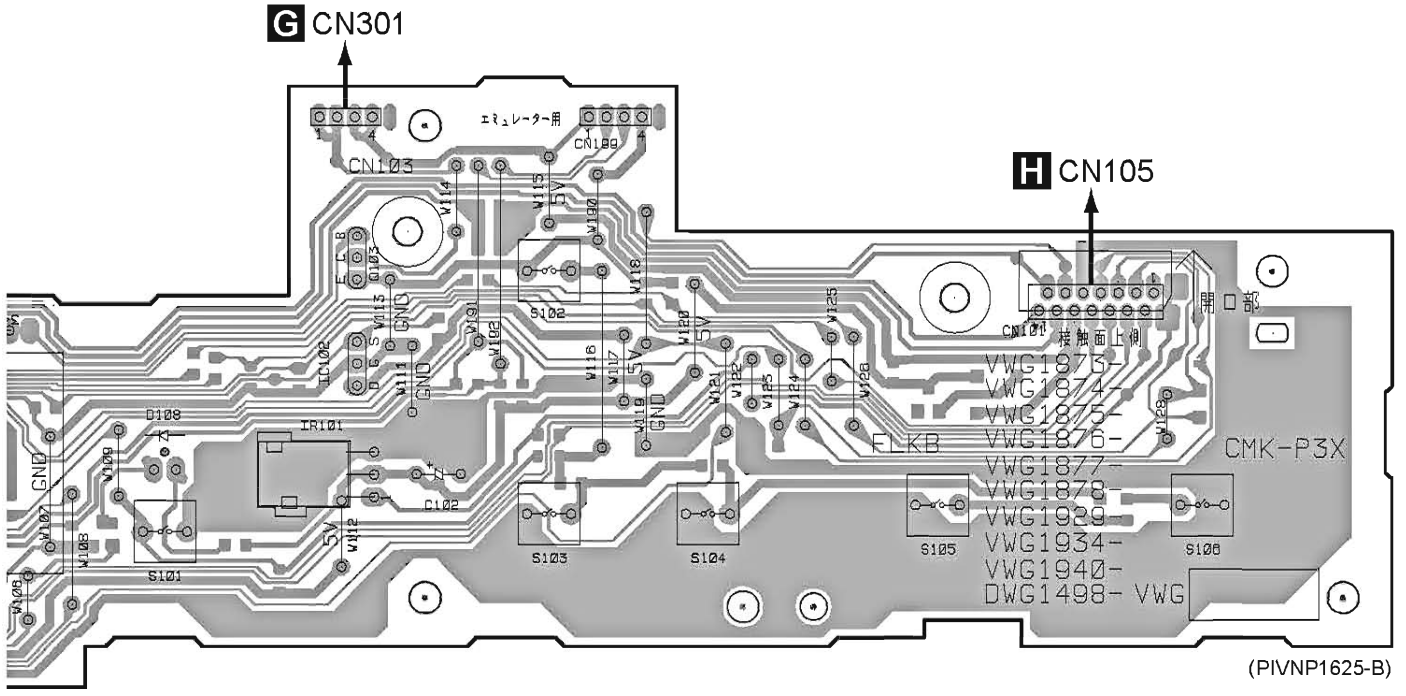
**SIDE B**

#### **E** FLKB ASSY

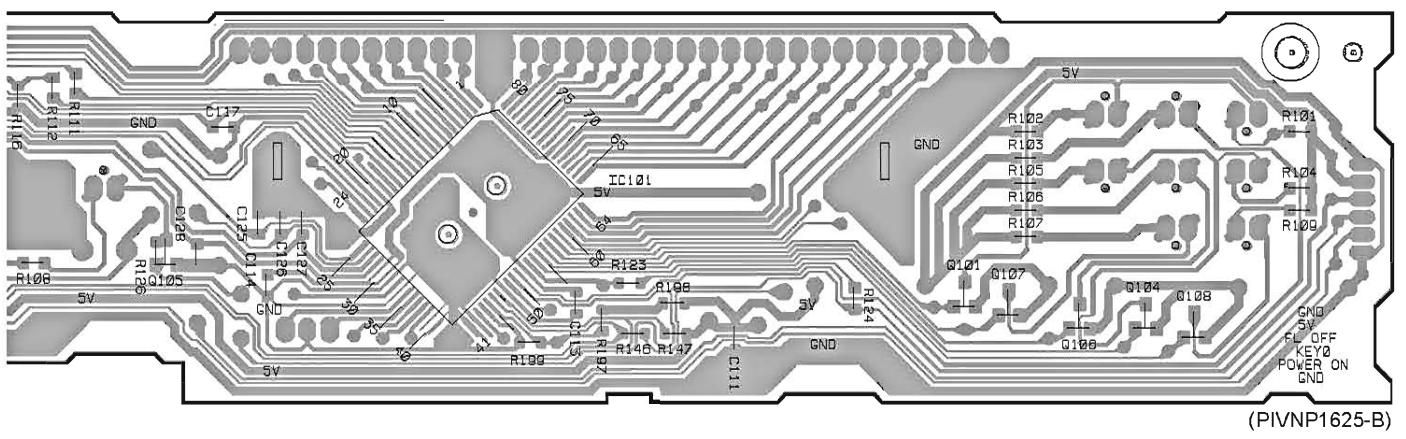


Q105





IC102 Q103



Q105

IC101

Q101 Q107 Q106 Q104 Q108

### 4.4 DVDM ASSY

• This PCB is a four-layered board. Middle layer is mainly connected to Vcc and GND.

A

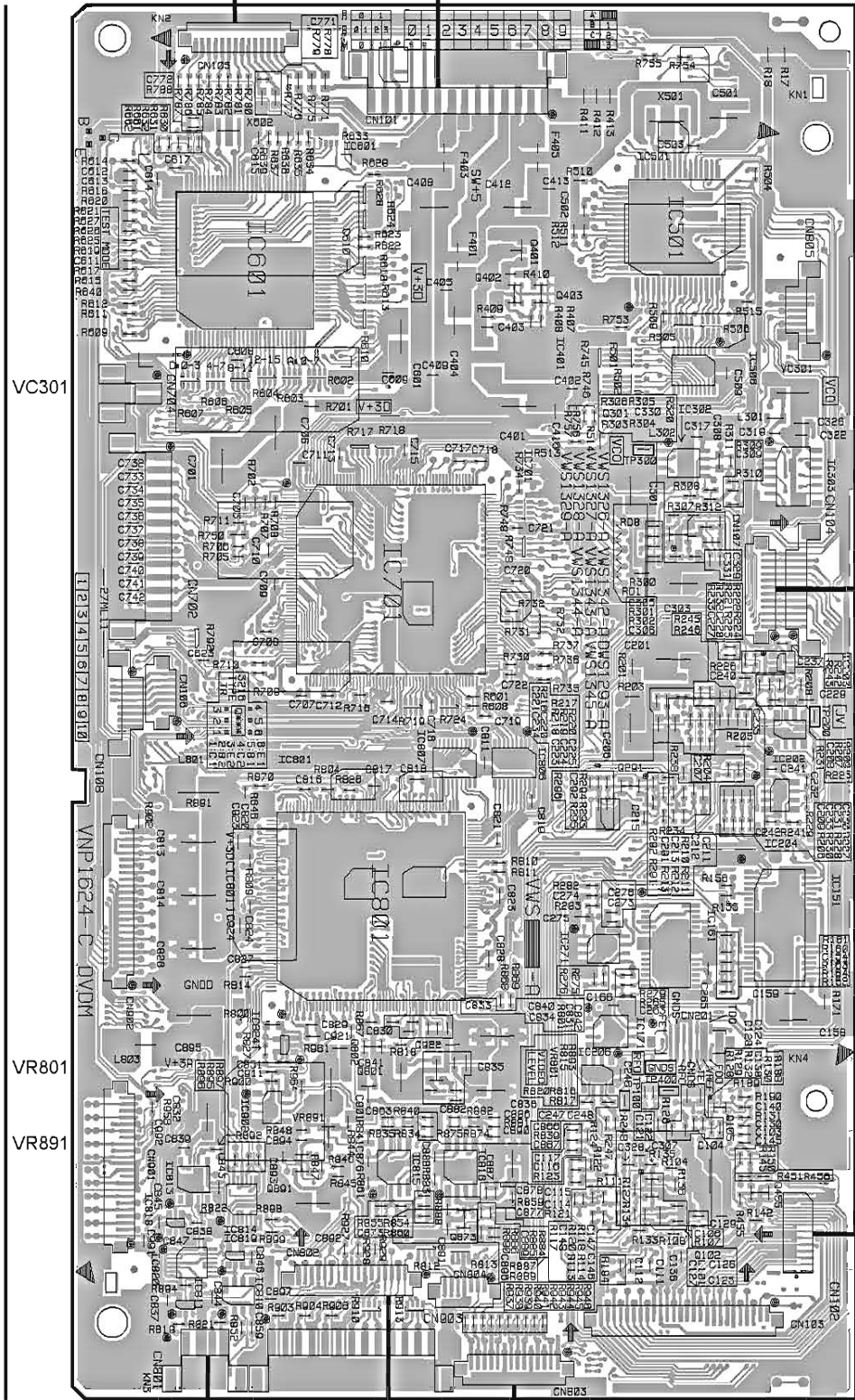
B

C

D

**E** CN101    **J** CN201    **H** DVDM ASSY

- IC601
- IC501
- Q401
- Q403
- IC506
- IC401
- VC301
- IC302
- IC303
- Q301
- IC701
- IC203
- IC202
- IC807
- IC806
- Q291
- IC204
- IC801
- IC151
- IC161
- IC271
- IC171
- IC824
- Q802
- IC206
- VR801
- Q801
- IC902
- Q105
- VR891
- IC815
- IC816
- Q891
- Q455
- IC813
- Q102
- IC814
- Q873
- IC820
- IC810
- IC811



**B** CN301

PICKUP ASSY

**I** CN301

**I** CN901

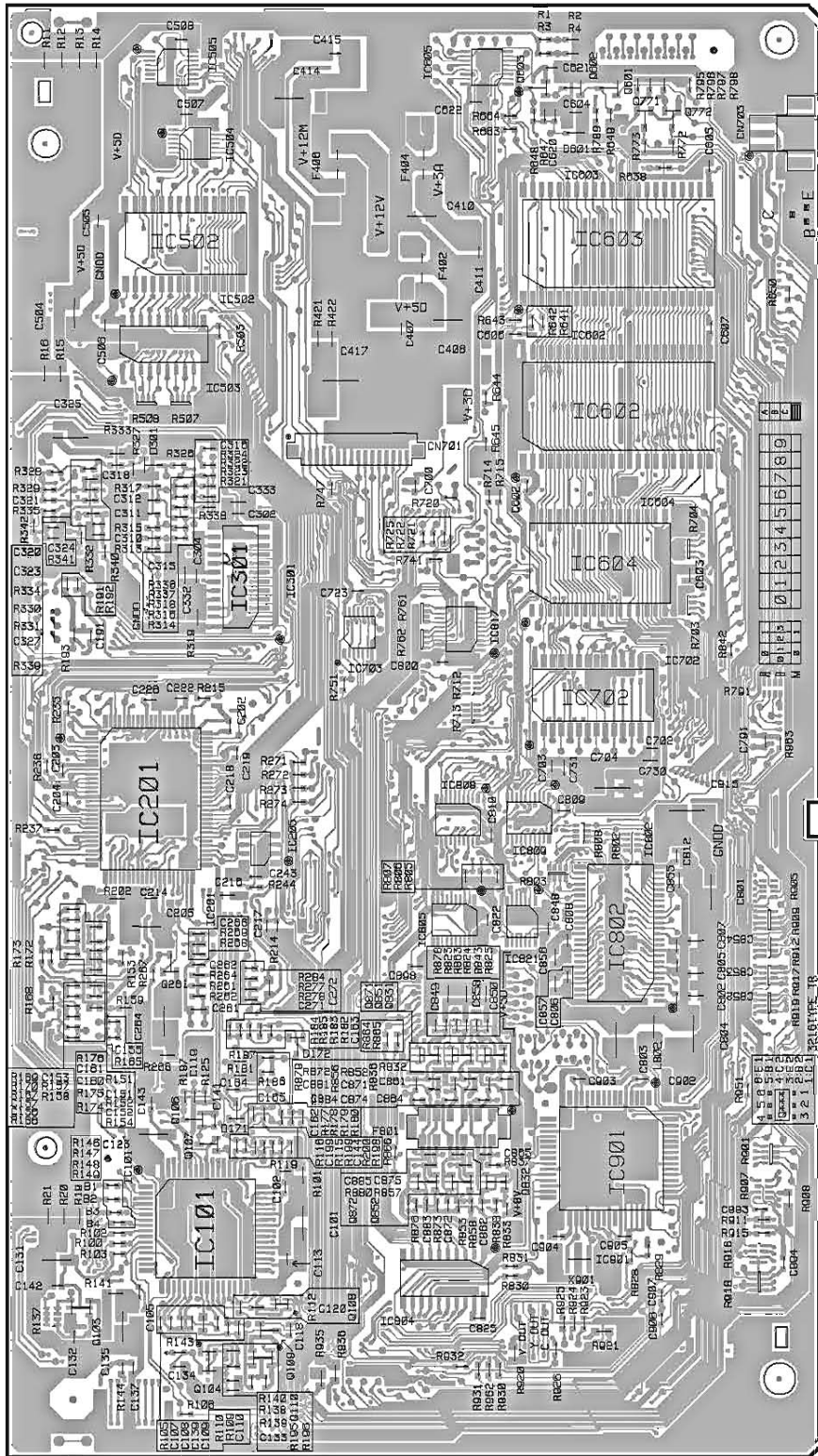
**I** CN191

**SIDE A**

(P1VNP1624-C)



# H DVDM ASSY



IC505	Q601
IC605	Q603
IC504	Q771
	Q772
IC502	IC603
IC503	
IC602	
IC301	IC604
IC703	IC817
IC702	
IC201	IC808
	IC809
IC205	
	IC805
	IC821
	IC802
Q261	
	Q871
	Q851
	Q831
Q106	
Q107	IC901
	Q872
	Q852
	Q832
IC101	
Q103	IC804
Q108	
Q110	
Q104	

(PIVNP1624-C)

**SIDE B**



### 4.5 AVJB ASSY

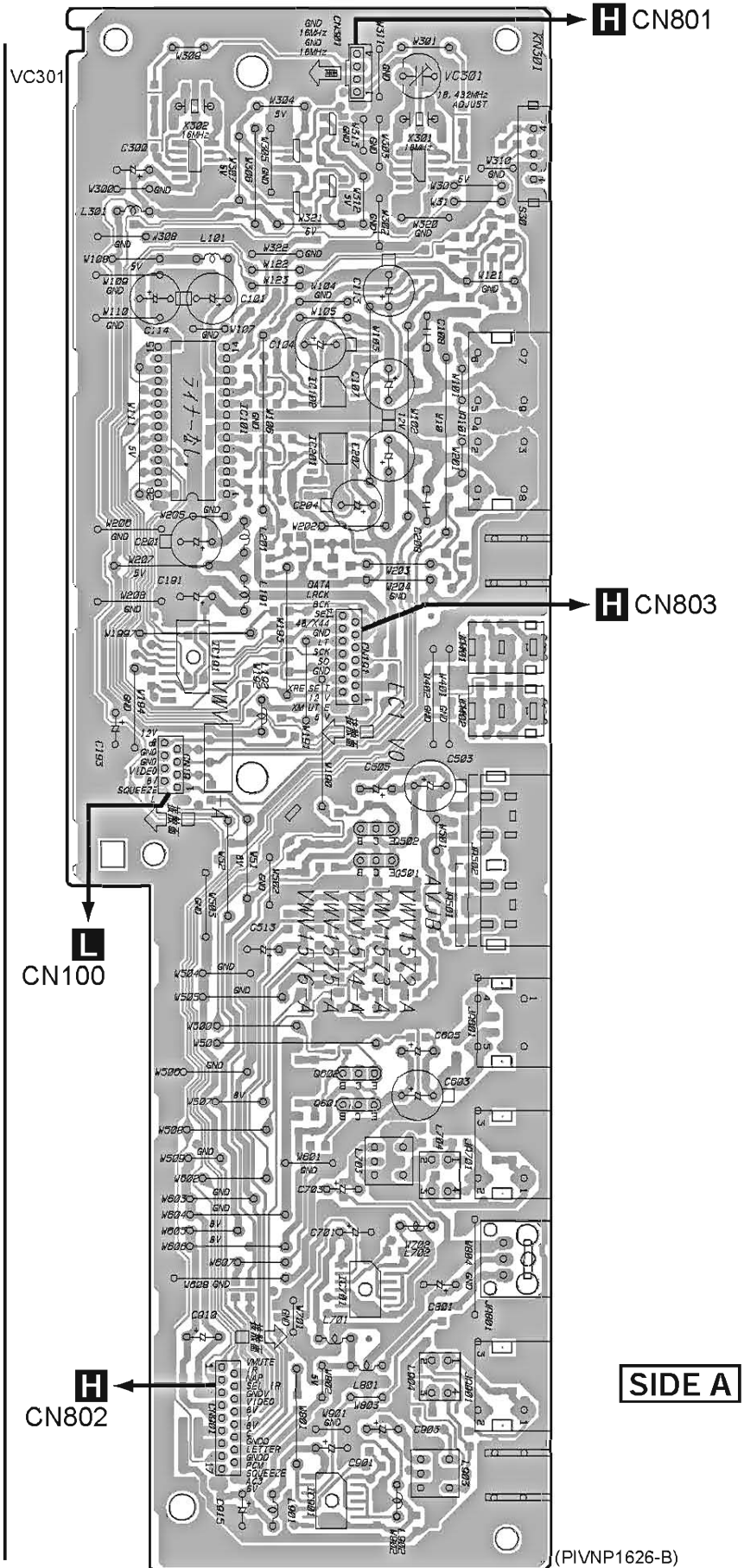
### **I** AVJB ASSY

A

B

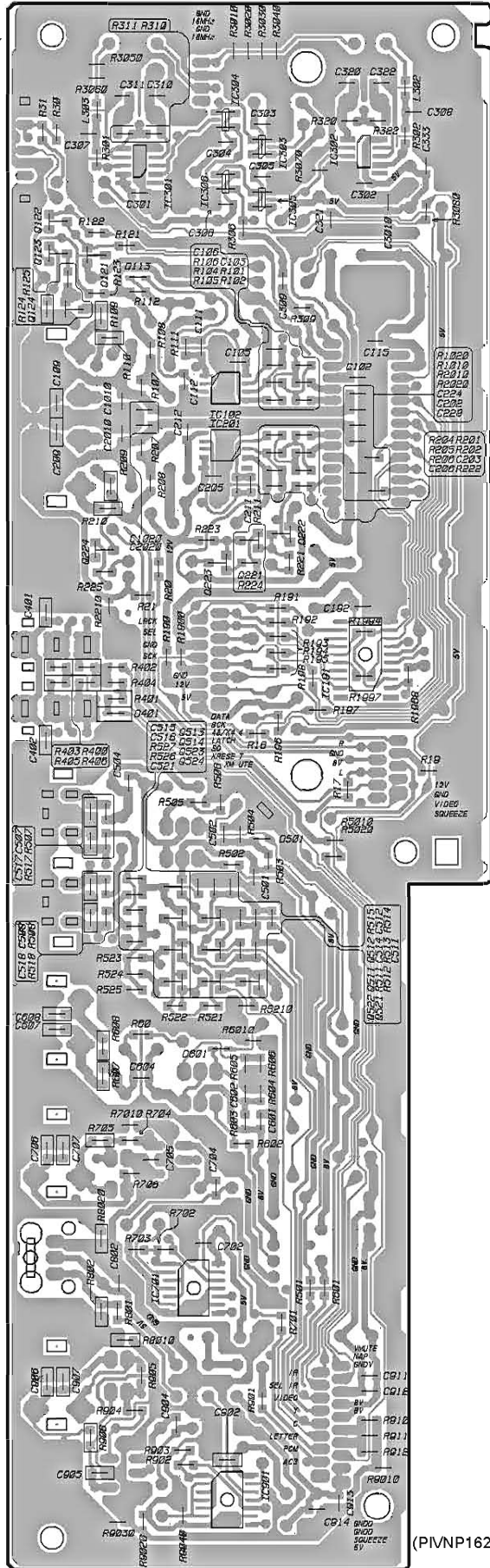
C

D





# AVJB ASSY



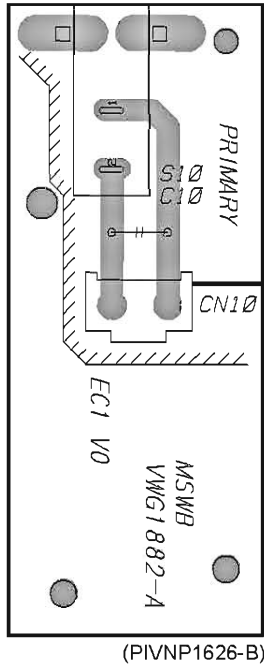
**SIDE B**

- IC301
- IC306
- Q121
- Q124
- IC102
- IC201
- Q221
- Q224
- Q511
- Q514
- Q521
- Q524
- IC701
- IC901

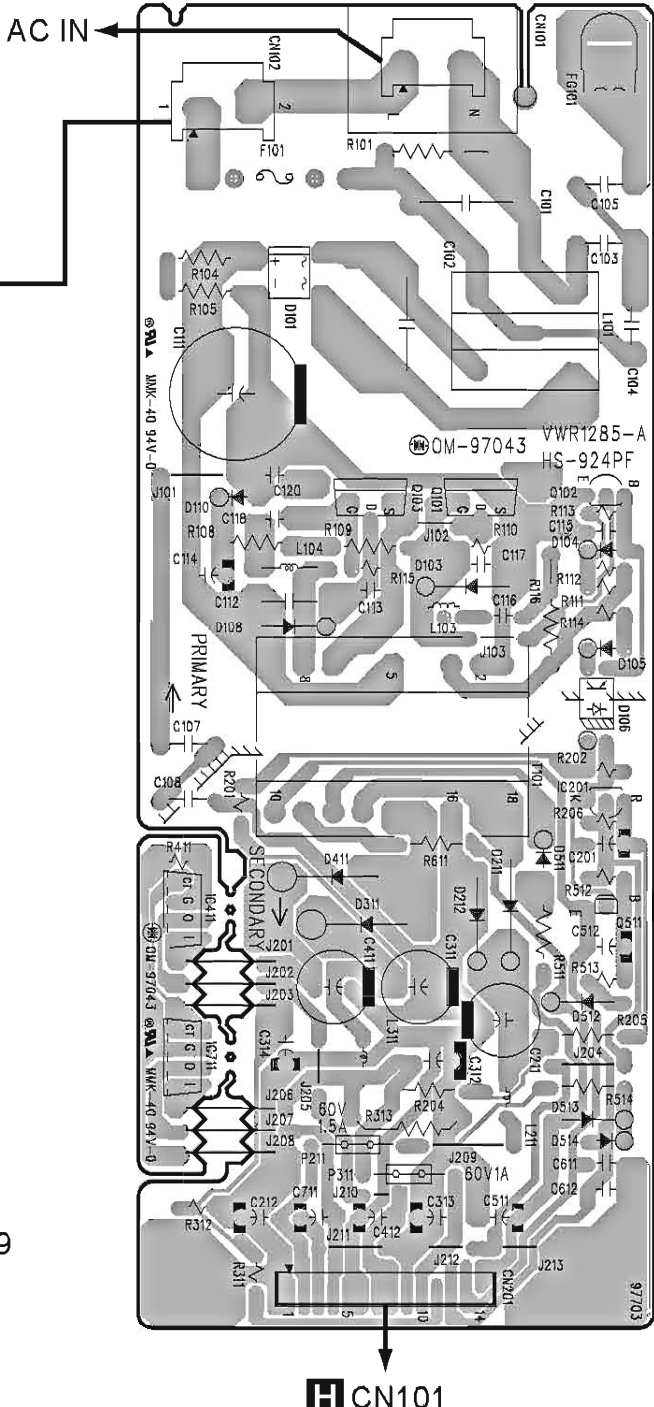
(PINP1626-B)

### 4.6 POWER SUPPLY, MSWB AND SCCB ASSEMBLIES

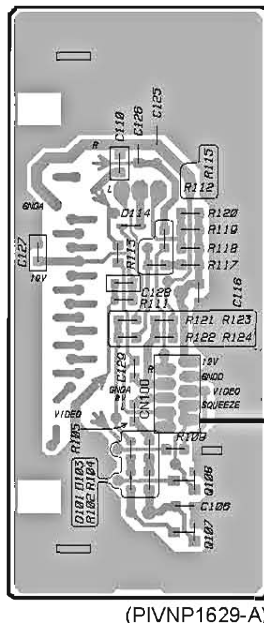
#### **K** MSWB ASSY



#### **J** POWER SUPPLY ASSY



#### **L** SCCB ASSY



**SIDE B**

**H** CN101

**SIDE A**

Q101  
Q103

IC201

Q511  
IC411

IC711

Q108

Q107

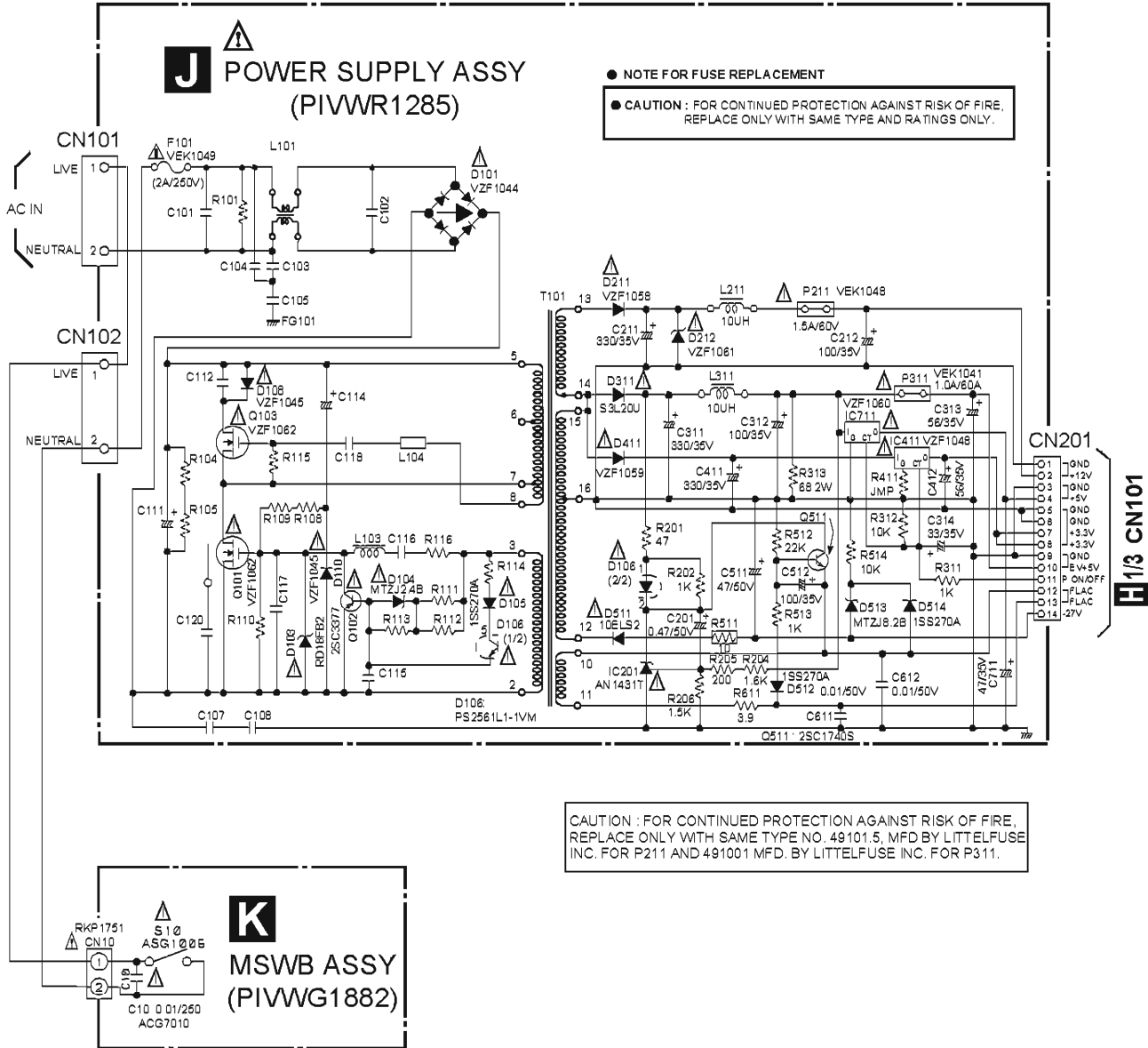
**I** CN19



### 3.7 POWER SUPPLY AND MSWB ASSEMBLIES

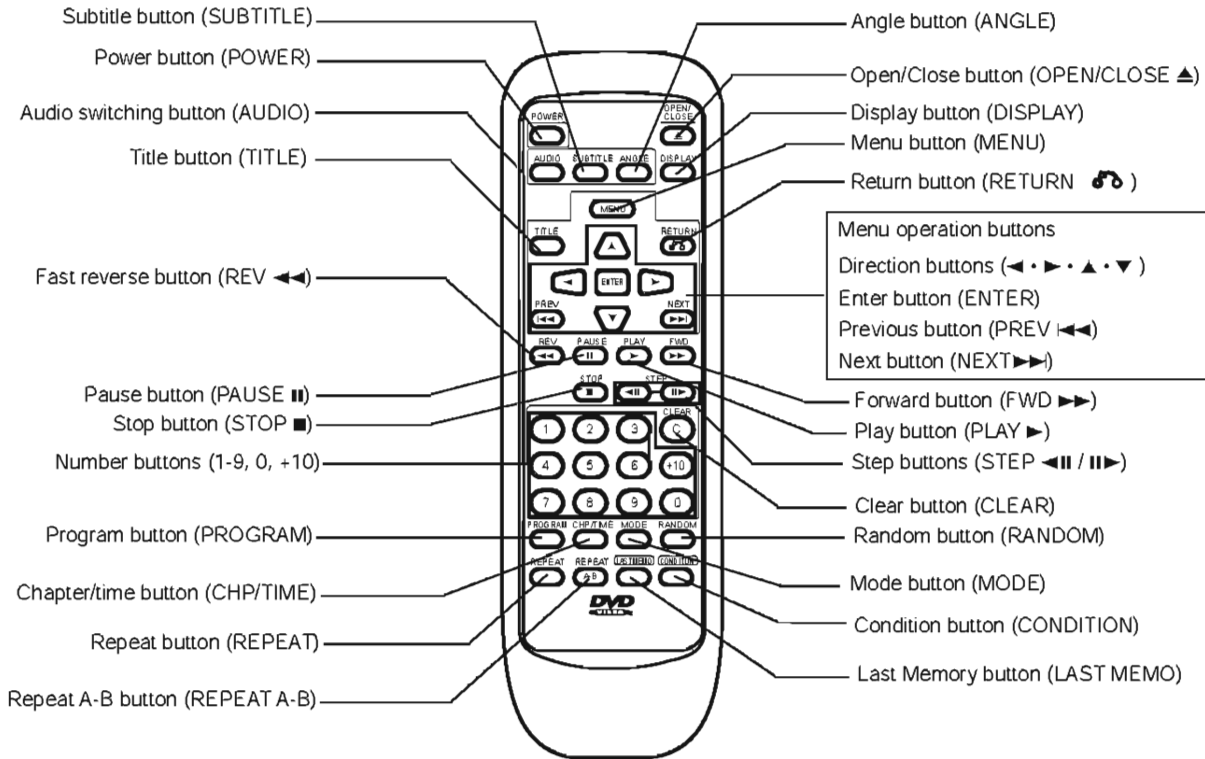
#### « NOTE OF SPARE PARTS IN POWER SUPPLY ASSY »

- In case of repairing, use the described parts only to prevent an accident.
- Please write the red ✓ mark on the board when the primary section of POWER SUPPLY Assy is repaired.
- Please take care to keep the space, not touching other parts when replacing the parts.





## ■ REMOTE CONTROL



# 1. SAFETY INFORMATION

This service manual is intended for qualified service technicians ; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

— IMPORTANT —

THIS HITACHI APPARATUS CONTAINS LASER OF CLASS 1. SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

— LASER DIODE CHARACTERISTICS —

MAXIMUM OUTPUT POWER : 7 mw  
WAVELENGTH : 650 nm

## LABEL CHECK

**CLASS 1  
LASER PRODUCT**

(Printed on the Rear Panel)

**CAUTION** : LASER RADIATION WHEN OPEN.  
: AVOID EXPOSURE TO BEAM.

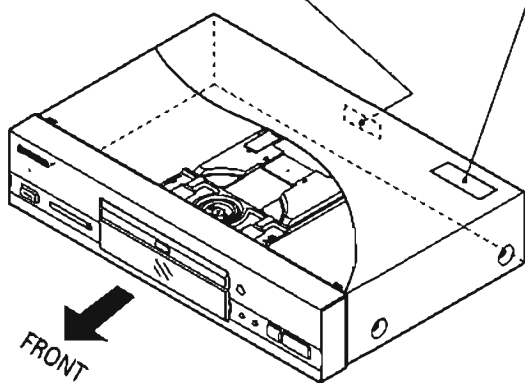
**VORSICHT** : LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET  
: NICHT DEM STRAHL AUSSETZEN!

**ADVARSEL** : LASERSTRÅLING VED ÅPNING UNDGA  
: UDSÆTTELSE FOR STRÅLING.

**VARNING** : LASERSTRÅLNING NÄR DENNA DEL ÄR  
: ÖPPNAD BETRÄKTA EJ STRÅLEN.

**VARO!** : AVATTAESSA ALTISTUT LASERSÄTEILYLLE.  
: ÄLÄ KATSO SÄTEESÄN.

VFW1697

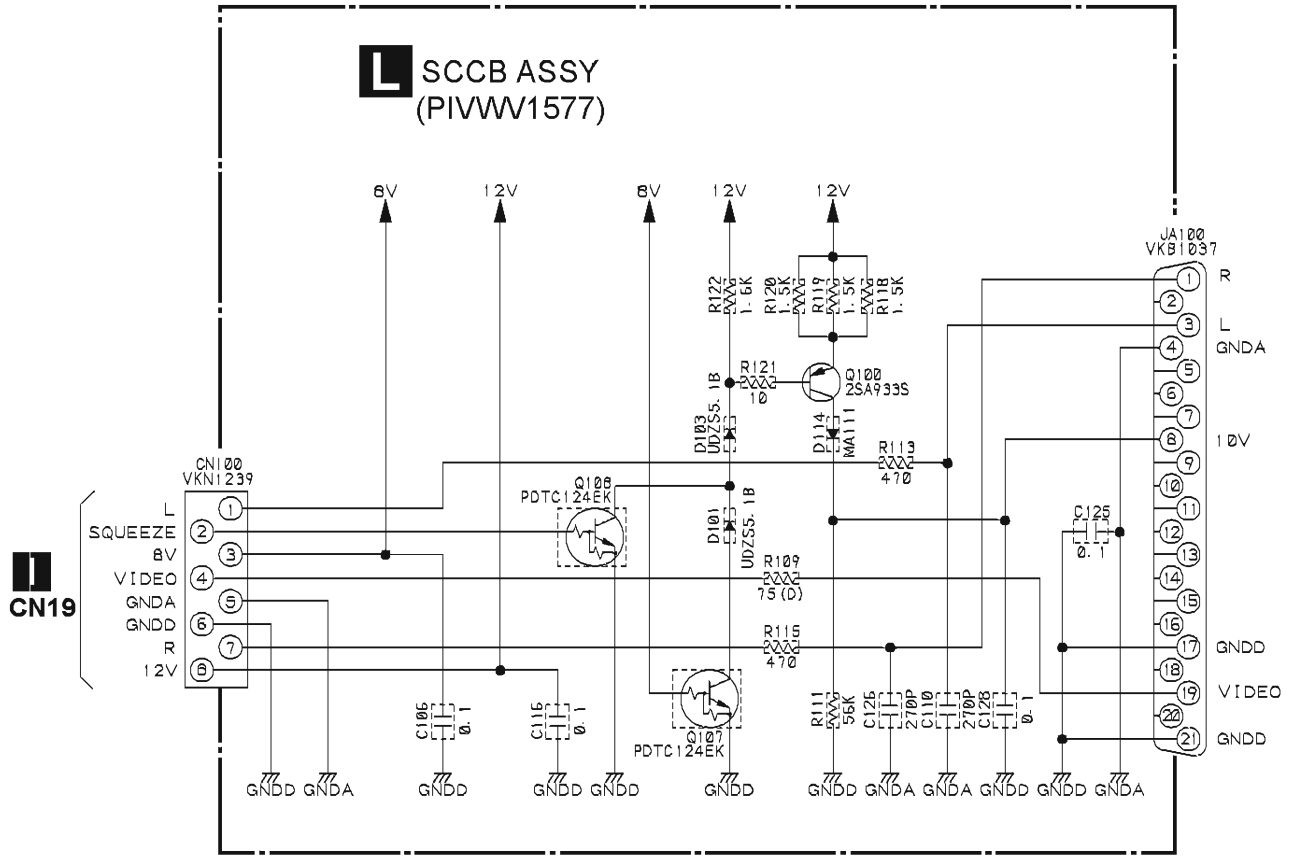


— Additional Laser Caution —

- Inside detection switch (S201 on the INSB assy) and loading-status detection switch (S301 on the LOSB assy) are detected by the microprocessor (IC501 in the DVDM assy).  
• To permit the laser diode to oscillate, it is required to set the inside detection switch for the inside position (S201 : ON) and to set the loading-status detection switch for the clamp position (the center terminal of S301 is shorted to +5V). The laser diode oscillation will continue if pin 13 of IC101 is shorted to +5V (fault condition) in the DVDM assy.  
In the test mode \*, the laser diode oscillates when microprocessor detects a PLAY signal, or when the PLAY key is pressed (S107 ON in the FLKB assy), with the above requirements satisfied.
- When the cover is open, close viewing through the objective lens with the naked eye will cause exposure to the laser beam.

\* : Refer to page 40.

### 3.8 SCCB ASSY



# 3. SCHEMATIC DIAGRAM

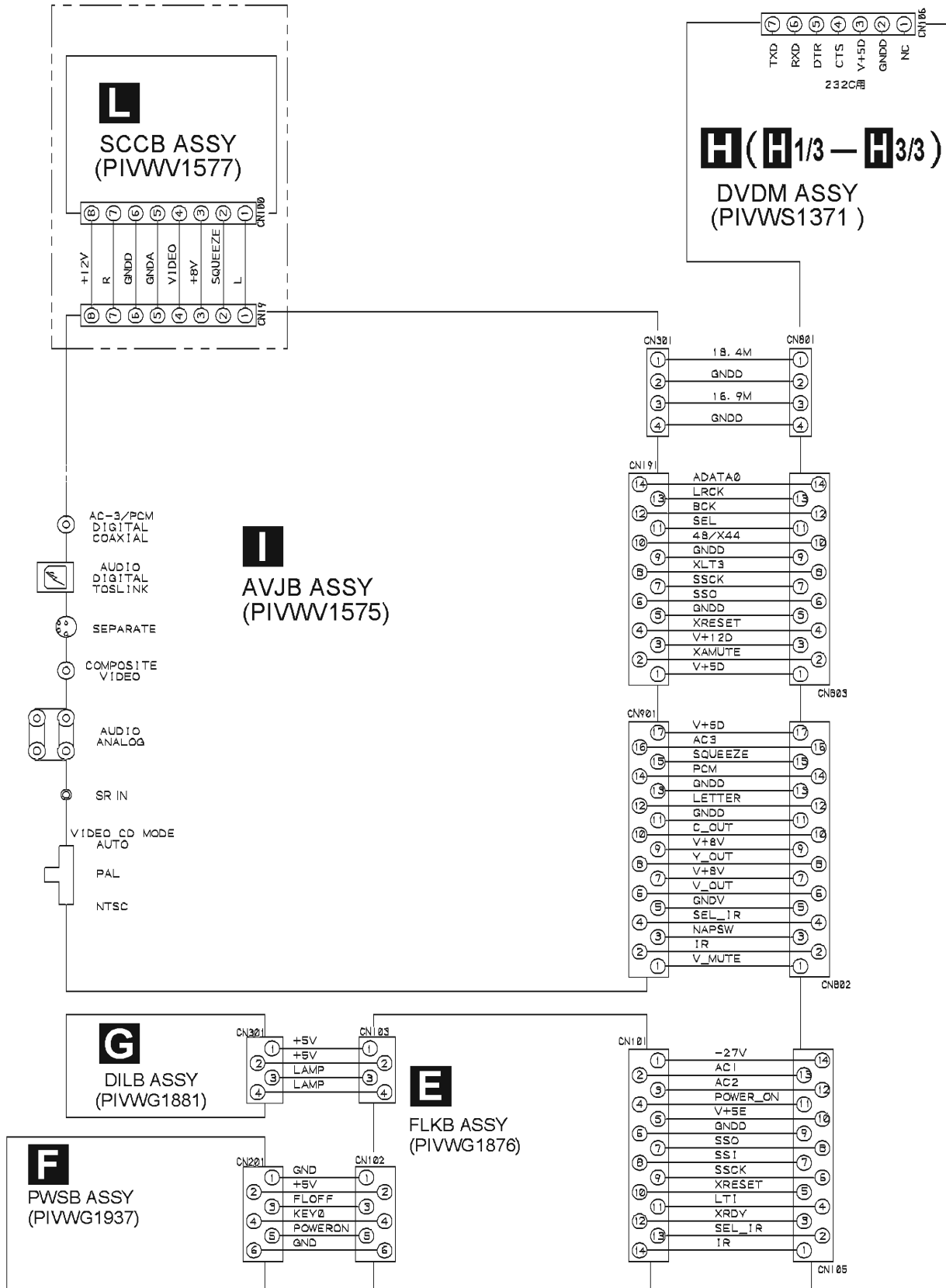
## 3.1 OVERALL CONNECTION DIAGRAM, LOMB, LOSB, INSB AND FGSB ASSEMBLIES

A

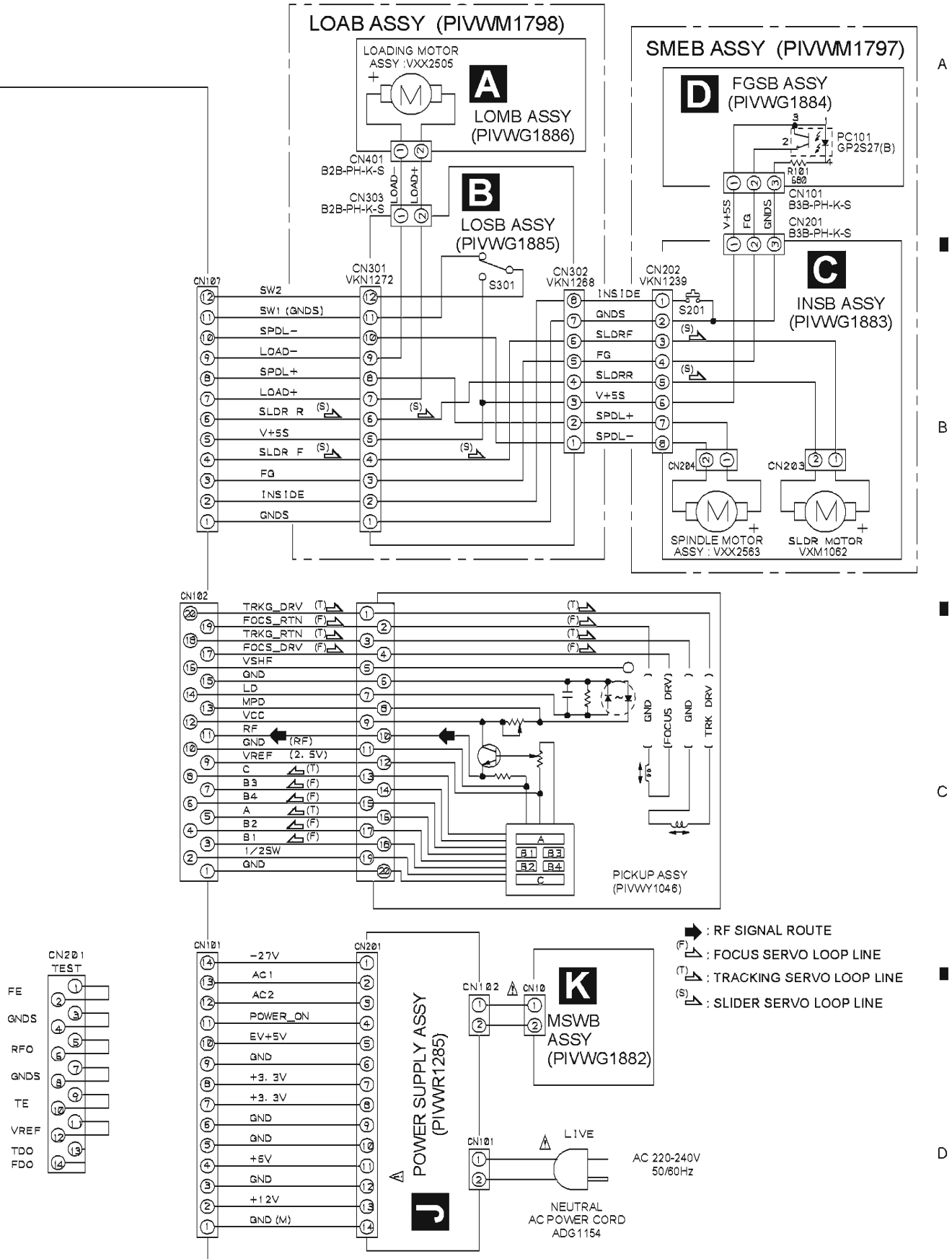
B

C

D



Note : When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".

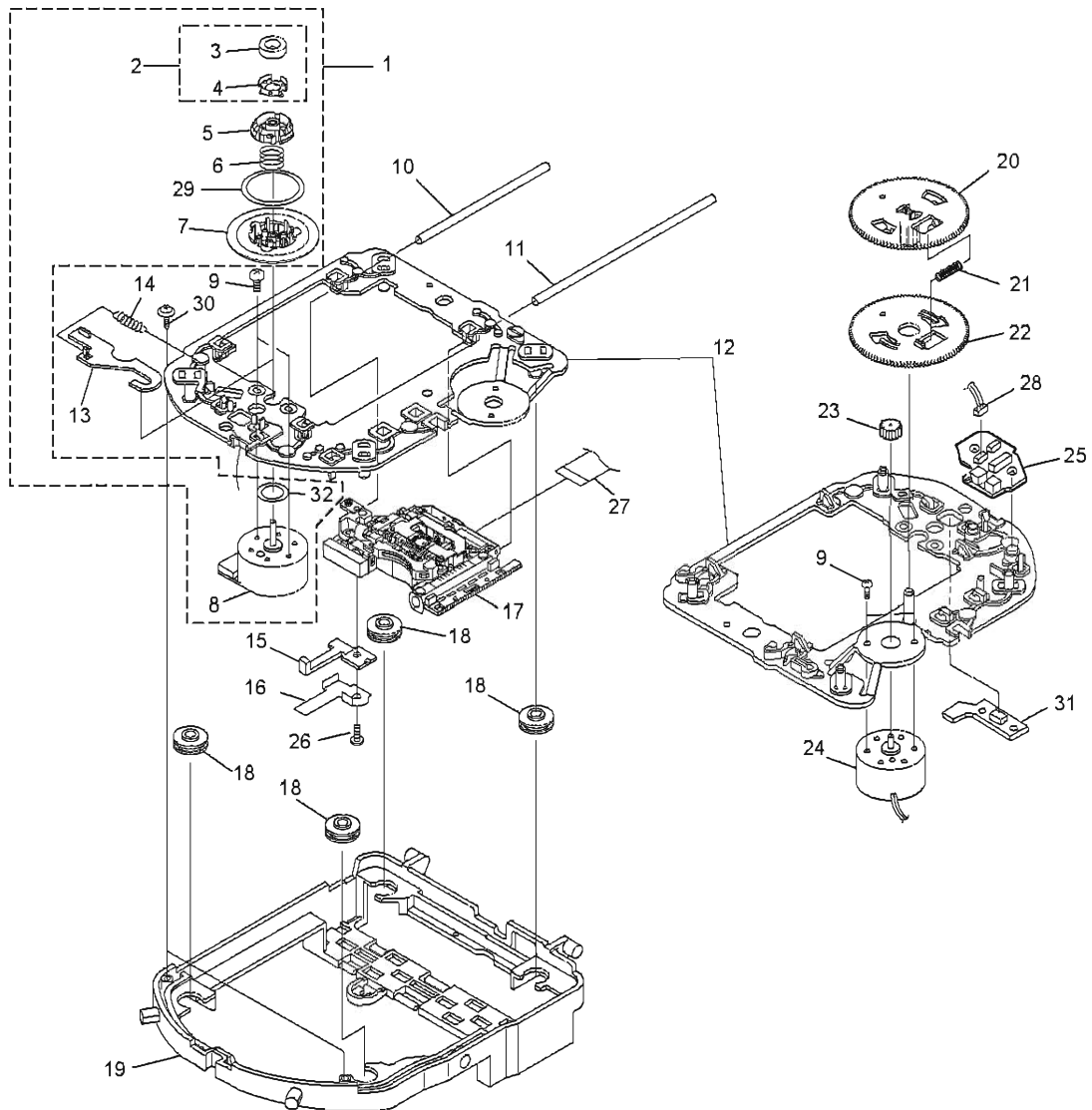


**A B C D**

## 2.6 SERVO MECHANISM ASSY

• Top View

• Bottom View



### • SERVO MECHANISM ASSY PARTS LIST

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Spindle Motor Assy	PIVXX2563		18	Floating Rubber	PIDEB1315
	2	Magnet Holder Assy	PIVXX2507		19	Float Base	PIVNL1732
NSP	3	Magnet	PIVYM1024		20	Gear D	PIVNL1766
NSP	4	Magnet Holder	PIVNE2070		21	Gear Spring	PIVBH1279
	5	Centering Ring	PIVNL1746		22	Gear E	PIVNL1767
	6	Centering Spring	PIVBH1278		23	Gear F	PIVNL1768
NSP	7	Disc Table	PIVNL1747		24	Motor	PIVXM1062
NSP	8	Motor	PIVXM1071	NSP	25	INSB Assy	PIVWG1883
	9	Screw	PIJGZ17P028FMC		26	Screw	PIPBZ20P050FMC
	10	Sub Guide Bar	PIVLL1489		27	Flexible Cable (20P) (DVDM CN102 – Pickup Assy)	PIVDA1680
	11	Guide Bar	PIVLL1488		28	Connector Assy (3P) (INSB CN201 – FGSA CN101)	PIVKP2150
	12	Mechanism Base	PIVNL1748	NSP	29	Table Sheet	PIDEC2040
	13	Hook	PIVNL1770		30	Screw	PIPBA1048
	14	Hook Spring	PIVBH1291	NSP	31	FGSA Assy	PIVWG1884
	15	Slider	PIVNL1745	NSP	32	Sheet	PIVEC1959
	16	HOLD SPRING	PIVNC1011				
NSP	17	Pickup Assy	PIVWY1046				

## 2. TEST MODE

### 2.1 HOW TO ENTER THE TEST MODE

There are three ways of entering the test mode.

1. Short-circuit the terminals (TP6006 and TP6007) for test mode entry located at the side of the system control IC (IC601) of DVDM ASSY, and turn the power on.
2. Press the [ESC] key and the [TEST] key on the Service Remote Control [PIGGF1067] while the player is in the power on mode.
3. Connect a personal computer to the RS232C terminal (CN106) and input the entry command (TE) of the test mode from the personal computer.

Note: FL indication and LED come all to light until key operation is done when entering the test mode.

### 2.2 RELEASE THE TEST MODE

There are three methods to escape the test mode.

1. Turn the power off.
2. Press [ESC] key of the remote control unit. At this time, reset it for a while.
3. Connect a personal computer with the RS232C terminal (CN106), and input normal mode entry command (NE) from the personal computer.

### 2.3 THE EXPLANATION OF EACH FUNCTION

The function that can be operated in the test mode is as the following. Use a LD remote control unit in the test mode.

#### (1) Door Open/Close

1. Press [REPEAT A-B] (48) key of the remote control unit.
2. Press [OPEN/CLOSE] key of the player from the stop condition.

#### (2) Stop

1. Press [REPEAT] (44) key of the remote control unit.
2. Press [STOP] key of the remote control unit or the player from the stop condition.

#### (3) Play 1 (Demultiplex exist which it tries to output the playback screen)

1. Press [PLAY] (17) key of the remote control unit.
  - DVD rise up at the tracking close. Playback screen may not appear because the NAVI information isn't read in the test mode.

#### (4) Play 2 (Demultiplex is absent which performing trace only)

1. Press [TV/LDP] (0F) key of the remote control unit.
  - Perform only tracing with DVD, and there are no video and audio output.

#### (5) Pause

1. It becomes pause condition by pressing [CX] (0E) key of the remote control unit in the play.
2. Pause ON/OFF changes alternately by pressing [PAUSE] (18) key in the play.

#### (6) Search Address Input Entry

It becomes the address input mode when [+10] key (1F) is pressed. (Indication for the most significant digit : > )

Indicate the last address as the initial condition in this time.

Only in case of DVD, addition search (indication for the most significant digit : + ) and subtraction search (indication for the most significant digit : - ) are able to select in order by pressing [+10] key continuously.

The address where input value was added to the present address is make to search with addition search.

The address where input value was subtracted to the present address is make to search with subtraction search.

In case of CD is only absolute time search.

Also address clear and release from the address input mode are able to perform by 2 steps by pressing [CLEAR] (45) key.

#### (7) Search Address Input

Press [0] to [9] keys of the remote control unit.

Set up the address by the hexadecimal number with DVD.

When [PROGRAM] (4C) key is pressed in the address input mode, input mode changes to hexadecimal number input (Indicates "\*" mark), and [1] to [6] keys are input as [A] to [F].

At this time, [7], [8], [9] and [0] keys are not accepted.

Also the hexadecimal number input and the decimal number input can be changed with toggle.

#### (8) Search Practice

1. Press [CHP/TIM] (13) key of the remote control unit.
  - Practice the on screen no playback (Doesn't demultiplex) after the search with DVD.
2. Press [PLAY] (17) key of the remote control unit.
  - Practice the on screen playback (demultiplex exists) after the search with DVD.

#### (9) Tracking Open

1. Press [STEP FWD] (54) key of the remote control unit in the play condition.
2. Switch the open/close by pressing [PLAY] key of the remote control unit or the player during the play (CD only).

### (10) Tracking Close

1. Press [STEP RVS] (50) key of the remote control unit in the play condition.
2. Switch the open/close by pressing [PLAY] key of the remote control unit or the player during the play (CD only).

### (11) Slider In

1. Press [SCAN RVS] (11) key of the remote control unit in the tracking off condition.
2. Turn the shuttle of the remote control unit in the REV direction (2C to 2F) in the tracking off condition. (DVD only)

### (12) Slider Out

1. Press [SCAN FWD] (10) key of the remote control unit in the tracking off condition.
2. Turn the shuttle of the remote control unit in the FWD direction (28 to 2A) in the tracking off condition. (DVD only)

### (13) Scan In

1. Press [SCAN RVS] (11) key of the remote control unit in the tracking on condition.
2. Turn the shuttle of the remote control unit in the REV direction (2C to 2F) in the tracking on condition.
  - DVD can be scanned only in the case of the play 2 (playback without demultiplex).

### (14) Scan Out

1. Press [SCAN FWD] (10) key of the remote control unit in the tracking on condition.
2. Turn the shuttle of the remote control unit in the FWD direction (28 to 2A) in the tracking on condition.
  - DVD can be scanned only in the case of the play 2 (playback without demultiplex).

### (15) Loading In/Out

When pressing [SKIP REV] (53) key of the remote control unit in the open condition, it loads in the clamp direction. Then it loads in the open direction when pressing [SKIP FWD] (52) key.

- This function can practice only when it is indicated with "OPEN" in FL.

### (16) Tilt Neutral

Press [SPEED DOWN] (46) key of the remote control unit.

### (17) Tilt Servo On/Off

- a. On  
Press [SPEED UP] (47) key of the remote control unit.
- b. Off  
Press [SKIP REV] (53) key and [SKIP FWD] (52) key of the remote control unit at the tilt servo on or the tilt neutral.

### (18) Tilt Down

A manual moves in the going down direction when [SKIP REV] (53) key of the remote control unit is pressed during the play at the time of tilt off.

### (19) Tilt Up

A manual moves in the going up direction when [SKIP FWD] (52) key of the remote control unit is pressed during the play at the time of tilt off.

### (20) Focus Jump +

Focus jumps in 1 layer from 0 layer when [MULTI FWD] (58) key of the remote control unit is pressed. (DVD only)

### (21) Focus Jump -

Focus jumps in 0 layer from 1 layer when [MULTI REV] (55) key of the remote control unit is pressed. (DVD only)

### (22) The First And The Second Screen Switching

Every time [DISPLAY] (43) key of the remote control unit is pressed, the contents of the version indication part (the bottom right of the screen) change. (Refer to page 10.)

### (23) Screen Display On

1. Press [DISPLAY] (43) key of the remote control unit.
2. Display on/off switches every time [PROGRAM] (4C) key of the remote control unit is pressed.
  - When [DISPLAY] key is pressed in the display on, change the part number indication of the microprocessor and revision indication.
  - Initial state is screen display on and it becomes the part number indication of the microprocessor.

### (24) Screen Display Off

1. Press [AUDIO] (1E) key of the remote control unit.
2. Display on/off switches every time [PROGRAM] (4C) key of the remote control unit is pressed.

### (25) Background Color Switching

1. Change the background color (eight colors) prepared for in advance every time [2/R] (49) key of the remote control unit is pressed in order.  
[Blue→Green→Light blue→Red→Purple→Yellow→Gray→Black→Blue ...]
2. Change the background color (eight colors) prepared for in advance every time [1/L] (4B) key of the remote control unit is pressed in order.  
[Blue→Black→Gray→Yellow→Purple→Red→Light blue→Green→Blue ...]

### (26) Video Output Switching

1. It becomes component output when pressing [DIGITAL EFFECT] (5C) key of the remote control unit.
2. It becomes composite output when pressing [STILL WITH SOUND] (5B) key of the remote control unit.



## 2.4 EXPANSION FUNCTION 1

Set the reception mode of expansion function by pressing [TEST] (5E) key of the test mode remote control unit, then expansion function is able to execute by pressing the key of [0] to [9].

Indication for the most significant digit becomes "T" during the reception mode of expansion function. (This mode can on and off with toggle.)

### (1) LD On

Turn the laser diode to on by pressing [TEST] and [1] keys in order.

### (2) Focus On

Focus locks by pressing [TEST] and [2] keys in order.

### (3) Focus Sweep

Repeat focus sweep by pressing [TEST] and [3] keys in order.

### (4) Spindle FG Servo

Rising up the spindle and FG servo becomes on by pressing [TEST] and [5] keys in order.

### (5) AGC On/Off

Switch the AGC on and off with toggle by pressing [TEST] and [7] keys in order.

### (6) Jitter Value Indication.

It becomes the jitter-value indication mode by pressing [TEST] and [DIG/ANA] keys in order.

### (7) DSP coefficient indication of FTS system.

Set up the address (four digits) of the coefficient that it wants to see by the point of search address input, then real time indicates the coefficient in OSD by pressing [TEST] and [9] keys in order.

### (8) CD Error Rate Indication

Indicate the value in OSD after measuring is completed by pressing [TEST] and [0] keys in order after set up the measuring time (1 to 8 seconds) by the point of search address input.

## 2.5 EXPANSION FUNCTION 2

Set the reception mode of expansion function 2 by pressing [HILITE/INTRO] (55) key of the remote control unit, then expansion function 2 is able to execute by pressing the key of [0] to [9].

### (1) Forced DVD Setting

In the checker mode, set up the condition that DVD is attached forcibly except for the result of disc distinction by pressing [HILITE/INTRO] and [1] keys in order.

In the no checker mode (normal test mode), once execute the setting but abandon it soon.

Therefore, perform the disc distinction again for the safety when rising up the player in this condition.

### (2) Forced CD Setting

In the checker mode, set up the condition that CD is attached forcibly except for the result of disc distinction by pressing [HILITE/INTRO] and [3] keys in order.

In the no checker mode (normal test mode), once execute the setting but abandon it soon.

Therefore, perform the disc distinction again for the safety when rising up the player in this condition.

### (3) Execute The Disk Distinction

In the checker mode, execute the disc distinction result by pressing [HILITE/INTRO] and [0] keys in order.

## 2.6 List of Test Mode Function

Contents of Command	Condition	Key Name of Remote Control Unit	Mode of Remote Control Unit
Open	STOP	REPEAT A	A8-48
Close	OPEN	REPEAT A	A8-48
Stop	PLAY	REPEAT B	A8-44
Play (DVD is only tracing.)	STOP	TV/LDP	A8-0F
Play (DVD is with decode.)	STOP	PLAY	A8-17
Pause on	PLAY	CX	A8-0E
Pause on/off	PLAY/PAUSE	PAUSE	A8-18
Search address input (0 to 9) *Use for other numerical value input		0 to 9	A8-00 to 09

Contents of Command	Condition	Key Name of Remote Control Unit	Mode of Remote Control Unit
Search address input (A to F)	During address input	PGM+1 to 6	
①Search address clear ②Escape the search input mode	During address input Address = 0	CLEAR	A8-45
Change the search address input mode (Off→absolute address→addition→subtraction→Off) *Use for other numerical value input.		+10	A8-1F
Search execution (ignore the wrong address)		CHAP/TIME	A8-13
Tracking open	PLAY	STEP FWD	A8-54
Tracking close	PLAY	STEP REV	A8-50
Slider in	TR : Off	SCAN REV Shuttle REV	A8-11 A8-2C to 2F
Low speed scan REV	TR : On	SCAN REV	A8-11
Scan REV (Jump number is variable)	TR : On	Shuttle REV	A8-2C to 2F
Slider out	TR : Off	SCAN FWD Shuttle FWD	A8-10 A8-28 to 2B
Low speed scan FWD	TR : On	SCAN FWD	A8-10
Scan FWD (Jump number is variable)	TR : On	Shuttle FWD	A8-28 to 2B
Loading in	STOP	SKIP REV	A8-53
Loading out	STOP	SKIP FWD	A8-52
Tilt neutral		SPEED DOWN	A8-46
Tilt servo on		SPEED UP	A8-47
Tilt servo off	Tilt : On/N	SKIP REV SKIP FWD	A8-53 A8-52
Tilt up	PLAY	SKIP FWD	A8-52
Tilt down	PLAY	SKIP REV	A8-53
LD on		TEST + 1	A8-5E + A8-01
Focus on		TEST + 2	A8-5E + A8-02
Focus sweep		TEST + 3	A8-5E + A8-03
Focus jump +		MULTI FWD	A8-58
Focus jump -		MULTI REV	A8-55
Spindle FG on		TEST + 5	A8-5E + A8-05
AGC on/off	AGC : Off/On	TEST + 7	A8-5E + A8-07
Indication of the FTS coefficient	After the address four-digit input	TEST + 9	A8-5E + A8-09
CD error rate indication	PLAY	TEST + 0	A8-5E + A8-00
Jitter indication		TEST + DIG/ANA	A8-5E + A8-0C
Screen indication on/Switching of the first screen and second screen	OSD Off/On	DISPLAY	A8-43
Screen indication off	OSD : On	AUDIO	A8-1E
Screen indication on/off		PROGRAM	A8-4C
Switching of ID display methods (decimal/hexadecimal)		DIG/ANA	A8-0C
DISC type designation • Forced designation to DVD • Forced designation to CD • Request for Disk sensing	STOP	HILITE/INTRO +1 +3 +0	A8-5A +A8-01 +A8-03 +A8-00
Tray close of disk sense inhibition	Checker mode	REPEAT A	A8-48
Background color (eight colors) switching		2/R	A8-49
Background color (eight colors) switching (reverse toggle)		1/L	A8-4B
Video : component output		DIGITAL EFFECT	A8-5C
Video : composite output		STILL WITH SOUND	A8-5B

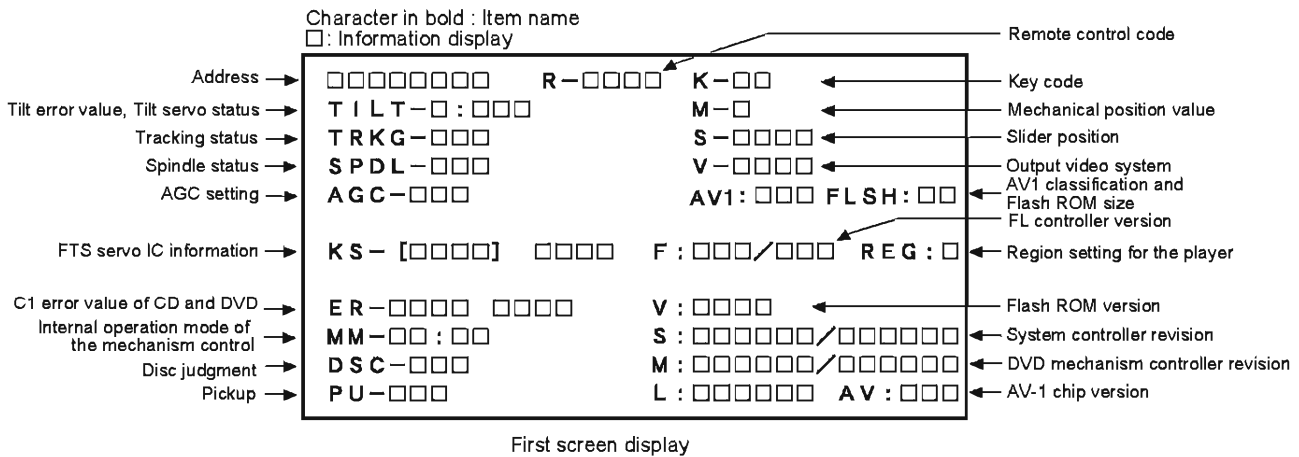
## ● Special Mention Item

- (1) Indications for the spindle status are as follows:  
 A/B : Spindle accelerator and brake  
 FG : FG servo  
 SRV : Rough, velocity/phase servo  
 O\_S : Offset addition, rough, velocity/phase servo
- (2) The movement of loading in/out starts from the tray open status. After that, this function is executed unless a play and close operation are done.
- (3) There are three methods for entering a search address:
  - ① Absolute address designation  
 → Searching for the address entered (indication for the most significant digit :>)
  - ② Additional input  
 → Searching for the address with the current ID number plus an entered number (indication for the most significant digit :+)
  - ③ Subtractive input  
 → Searching for the address with the current ID number minus an entered number(indication for the most significant digit :-)
 The above modes can be changed by pressing [10] key.  
 Note : A number for addition or subtraction must be entered in hexadecimal.
- (4) If you turn the power on while short-circuiting the short-circuit terminal at the side of the system controller, the player will forcibly enter the test mode. If the FL controller is set to Checker mode, disc sensing will not be started, even if a disc is loaded. Disc sensing will also not be performed if the tray is open/closed by your pressing [REPEAT A] key while in Checker mode. However, disc sensing will be started if the [OPEN/CLOSE] key on the player or on the remote control unit is pressed.
- (5) If disc-type designation is forcibly executed during a mode other than Checker mode, the system controller will abandon disc-type designation after setting the mechanism controller. Therefore, after startup of the player, disc sensing will be performed again for safety. If disc-type designation is forcibly executed during Checker mode, as disc-type designation is not abandoned, playback will be immediately started.
- (6) A background color change in order of blue → green → light blue → red → purple → yellow → gray → black → with the [2/R] key. It changes in order of gray → yellow → purple → red → light blue → green → blue → black → in the case of the [1/L] key.
- (7) In case of PD0260A\*, tilt servo on function may not move with DVD.

## 2.7 Test Mode Screen Display (The Second Generation)

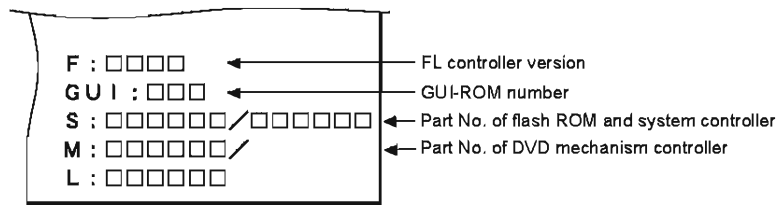
Consecutive double-OSD display is supported during test mode. The screen is composed 10 lines with a maximum of 32 characters per line. It can't be used with the debugging display mode together.

### • Screen Composition



#### Caution :

The first screen and second screen switch by pressing [DISPLAY] key of the remote control unit.  
 It is only a version display part on the lower right of the screen those contents of display change.  
 ATB : ON/OFF information display and AGC manual establishment display deleted with the second generation.



Second screen display (at lower right portion of the screen)

## • Description of Each Item on the Display

### (1) Address indication

The address being traced is displayed in number.

DVD : ID indication (hexadecimal number, 8 digits) [\*\*\*\*\*]  
 CD : A-TIME (min. sec.) [0000\*\*\*\*]  
 (Note : For DVDs, decimal-number indication is possible.)

### (2) Code indication of the remote control unit [R-\*\*\*\*]

The code for the key pressed on the remote control unit, which is received by the FL controller, is displayed while the key is pressed. In the case of the double code, the second code will be displayed.

### (3) Key code indication for the main unit [K-\*\*]

The code for the key pressed on the main unit, which is received by the system controller, is displayed while the key is pressed.

### (4) Tilt error value, Tilt servo status [TILT-\*:\*\*\*\*]

Tilt error value : [0] to [F]  
 Tilt servo status :  
   Tilt neutral [N]  
   Tilt servo on [ON]  
   Tilt servo off [OFF]

### (5) Tracking status [TRKG-\*\*\*]

Tracking on [ON]  
 Tracking off [OFF]

### (6) Spindle status [SPDL-\*\*\*]

Spindle accelerator and brake [A/B]  
 FG servo [FG]  
 Rough, velocity phase servo [SRV]  
 Offset addition, rough, velocity phase servo [O\_S]

### (7) Mechanism position value [M-\*]

Position code [0] to [8]

### (8) Slider position [S-\*\*\*\*]

CD TOC area [IN ]  
 CD active area [CD ]  
 Side B inside [B IN]

### (9) AGC setting [AGC-\*\*]

AGC on [ON]  
 AGC off [OFF]

### (10) Output video system [V-\*\*\*\*]

NTSC system [NTSC]  
 PAL system [PAL ]  
 Auto-setting [AUTO]

### (11) FTS servo IC information

Indications for the following two types of information can be switched:

- ① DSP coefficient indication [KS-[\*\*\*\*] \*\*\*\*]  
 Displays the address (four digits) of the specified coefficient and the setting value (four digits) with [TEST] and [9] keys.
- ② Jitter value indication [JT-[0000]\*\*\*\*]  
 Displays the jitter value (four digits) with [TEST] and [DIG/ANA] keys.

### (12) Error rate indication

- ① C1 error value of CD [ER-C1 \*\*\*\* ]
- ② C1 error value of DVD [ER-\*\*\*\* \*\*\*\*]

### (13) Internal operation mode of mechanism controller [MM-\*\*:\*\*]

Internal mechanism mode (2 digits) and internal mechanism step (2 digits) of the mechanism controller

Note : For details, see the specifications of the mechanism controller.

### (14) Disk sensing [DSC-\*\*\*\*]

The type of discs loaded is displayed.  
 [DVD], [CD], [VCD], [ ]

### (15) Pickup [PU-\*\*\*\*]

The pickup being operating is displayed.  
 DVD [DVD]

### (16) Destination setting of the FL controller [F:\*\*\*/\*\*]

Three characters in front represent the type of model:  
 505: DV-P2E

Three characters that follow represent the destination code.  
 WY: /WY

### (17) Region setting of the player [REG:\*]

Setting value [1] to [6]

### (18) Version of the flash ROM [V:\*.\*\*]

### (19) Revision of the system controller [S:\*.\*\*/\*.\*\*]

- ① Revision number of the external ROM part (flash ROM) of the system controller <Front>
- ② Revision of the internal ROM part of the system controller <Rear>

## (20) Revision of the DVD mechanism controller

[M:\*.\*\*\*/\*.\*\*\*]

- ① Revision number of the external ROM part (flash ROM) of the DVD mechanism controller <Front>
- ② Revision of the internal ROM (core part) of the DVD mechanism controller <Rear>

## (21) Version of the AV-1 chip [AV:\*.]\*

## (22) Version of the FL controller [F:\*.]\*

## (23) Control number of the GUI-ROM [GUI:\*\*\*]

## (24) The part number of the flash ROM and system controller [S : \*\*\*\*\*/\*\*\*\*]

- ① Part number of the flash ROM <Front>  
(Example) VYW1602-A → W1602A  
(Example) PD626A9 → 6256A9
- ② Part number of the system controller <Rear>  
(Example) PD3381T1 → 3381T1

## (25) Part number of the DVD mechanism controller

(Example) PD4889A0 → 4889A0

## (26) AV1 classification [AV1 : \*\*\*]

RAM, E/A, S/C

## (27) Flash ROM size [FLSH : \*\*]

8M : 8M bit, 4M : 4M bit

## 2.8 DESCRIPTIONS OF NEW FUNCTIONS IN TEST MODE

### 2.8.1 Error Rate

#### ● Overview

The error rate of CDs can be measured and the value is displayed in decimal and indicates the number of C1 errors (including the corrected ones) counted during the specified measurement time.

An indeterminate measurement result may be caused by a dirty disc, decentering, surface deflection, birefringence (double reflection), or a pickup problem (dirty lens, etc.), misadjustments of the pickup, improper automatic adjustment, or incomplete adjustments. On the manufacturing line, the value is used for yes/no decision of pickups. Normally, for a measurement for 5 seconds, the value may be less than 10 with a clean disc and less than 100 with a disc with some damage.

#### ● Using the Function in Test Mode (The Remote Control Keys to be Used are Indicated in Brackets)

- (1) Set the CD to trace (playback) state.
- (2) Set the player to Number input mode by pressing [+10] and enter the measurement time in a range of 1 to 5 (sec.).
- (3) Start measurement by pressing [TEST] + [0]. The SubQ counter stops during measurement, but this is not a malfunction. When the specified measurement time has elapsed, the result is indicated to the right of "ER C1 -" on the screen.  
If you skip step 2, the measurement time is set to 5 (sec).

### 2.8.2 Jitter Value

#### ● Overview

The jitter values of DVDs and CDs, which show a voltage in three-digit decimal as ○○○V, can be displayed. For example, the indication "0278" means 2.78 V. The larger the value, the worse the jitter. The worst value is 3.25 V. When playing a DVD or a video CD with which the jitter value is extremely high, mosaics may be seen. As with the error rate, the jitter depends on the disc and pickup. The jitter value to be displayed has no close correlation with a jitter measuring device, and is to be regarded just for reference.

Reference : When the jitter value is 2.9 V or more with a DVD, or 3.0 V or more with a CD (or a video CD), it may cause a problem (mosaic, audio distortion, etc.) in playback.

#### ● Using the Function in Test Mode (The Remote Control Keys to be Used are Indicated in Brackets)

- (1) Set the DVD or CD to trace (playback) state with AGC OFF.
- (2) Press [TEST] and [DIGITAL/ANALOG].  
The current jitter value appears to the right of "JT:○○○○" on the display. The jitter value keeps changing unless any additional key operation is made.

Note : Although a value may be displayed on the screen even with AGC ON, this is NOT a jitter value.

The jitter value with AFB ON cannot be displayed (see the next section). The jitter value with AFB ON can be obtained only by directly measuring the voltage at the JV connector (pin 94) of the servo DSP (LC78650).

### 2.8.3 Startup Sequence

The basic flow is shown below.

- (1) Closes the tray.
- (2) Detects the peak.
- (3) Distinguishes the disc.
- (4) SGC
- (5) Turns on the focus servo.
- (6) Starts the spindle rotation.
- (7) ATB
- (8) Measures the MIRR modulation degree.
- (9) Turns on the tracking servo.
- (10) Turns on the slider servo.
- (11) Turns on the spindle servo.
- (12) Focus AGC
- (13) Tracking AGC
- (14) AFB
- (15) Plays AGC (for CDs)
- (16) Plays back.

- \* For a 2-layer DVD, steps (7) through (14) are repeated for each layer.
- \* When starting up with [TV/LDP] in Test mode, all the steps (1) to (16) are performed for a DVD, and steps (1) to (8) are performed for a CD.

### 2.8.4 Peak Detection

#### ● Overview

This is a new function to measure the size and location of the sine wave related to focus errors at the beginning. The measurement is performed in the normal startup process and in Test mode, as well. If the sine wave is small, the OE IC gain is switched. Only the judgment for NO DISC is accomplished at this time. The operation is in effect as for judgment for DISC.

#### ● Using the Function in Test Mode

This function is not assigned to any remote control keys. Only an open/close operation can trigger the function.

### 2.8.5 Disc Distinction

#### ● Overview

This function is almost the same as that with the first-generation models. The only difference is as follows: If an error occurs in the startup sequence and playback cannot be started, startup is retried after forcibly switching the disc distinction from DVD to CD or vice versa by a backup process. If startup fails again, it is canceled, and an error is generated. The types of error that triggers the backup process for disc distinction are discussed in the next section.

#### ● Using the Function in Test Mode

This function is not assigned to any remote control keys. Only an open/close operation can trigger the function.

### 2.8.6 SGC

#### ● Overview

This is a new function to maintain the sine wave related to focus errors to a certain size so that the sine wave shows 1.8 V for the P-to-P value.

This operation is performed each time after judging disc presence and distinction in the normal startup process and in Test mode, as well. The operation is achieved by switching the FE gain inside the RF IC (LA9700) by using the voltage at the SGC connector (pin 22) of the RF IC.

#### ● Using the Function in Test Mode

This function is not assigned to any remote control keys. Only an open/close operation can trigger the function.

### 2.8.7 Measurement of MIRR Modulation Degree

#### ● Overview

The slice voltage of the RF signal is measured and used in the calculation to generate the MIRR signal. This operation is made in synchronization with ATB ON/OFF in normal startup and in Test mode, as well.

### 2.8.8 AFB (Auto Focus Bias) Function

#### ● Overview

This function supports DVDs as well as CDs. The operation is executed only once (once for each layer for a 2-layer DVD) after the focus and tracking AGC at startup. The operation is accomplished not by centering the focus servo to Vref (2.5 V), but by gradually changing the center value for the optimum jitter value. Thus, performance with an improper or dirty disc (by fingerprints, etc.), or the temperature characteristics (at 0°C, 35°C, etc.) will be improved.

#### ● Overview Using the Function in Test mode (the Remote Control Keys to be Used are Indicated in Brackets)

As the function is to be synchronized with AGC, turn on and off AFB by pressing [TEST] + [7]. The jitter value measurement cannot be made with AFB ON.

## 2.8.9 PLAY AGC

### ● Overview

The SGC voltage is adjusted during playback according to the RF signal level. (For details on SGC, see section 2.8.6.)

Only for CDs, this adjustment is made only once immediately after AFB during startup. In Test mode, it synchronizes with AGC ON/OFF. The operation is achieved through adjustment in the Servo DSP (LC78650), and the SGC voltage is output via AUX0 (pin 44).

### ● Using the Function in Test Mode (the Remote Control Keys to be Used are Indicated in Brackets)

As the function is to be synchronized with AGC, turn on and off AFB by pressing [TEST] + [7].

## 2.9 Additional Descriptions of Error Generation

This section describes the major errors of the mechanism-control computer.

### (1) DISC Distinction Error (Error 38)

The most common error. The tracking overcurrent error (Error c3), Defocus error (Error 33), spindle errors (Errors 41 to 4b), auto sequence errors (Errors 51 to 55) and code misread errors (71 to 74) often lead to this error.

### (2) Search Errors (Errors 11, 12, 19)

Almost all cases where playback suddenly stops may involve these errors. They may be generated because of defects on the disc. As with the code misread errors below, they can also be generated by a dirty disc or bad jitters.

### (3) Code Misread Errors (Errors 71 to 74)

Almost all cases where the inserted disc does not start or immediately stops playing may involve these errors. They may be generated because of a dirty disc or bad jitters. A bad jitter may be caused by a dirty disc, decentering, surface deflection, birefringence (double reflection), or a pickup problem (dirty lens, etc.), misadjustments of the pickup, improper automatic adjustment, or incomplete adjustments.

### (4) Spindle Errors (Errors 48, 49)

An FG transition timeout (Error 48) may be generated because of instability of the FG signal or unavailability of spindle drive voltage. A PLL transition timeout (Error 49) can be generated with a dirty disc.

### (5) Automatic Sequence Errors (Errors 51 to 55)

If any automatic sequence (auto execution command) of the servo DSP is not completed, these errors are generated. The causes differ among error numbers. They may be caused by abnormalities in the communication line between the mechanism-control computer (PD4889A) and the servo DSP or instability of the XABUSY connector (pin 38) of the mechanism-control computer.

### (6) DSP Communication Errors (Errors a1 to a6)

These errors will be generated if the mechanism-control computer cannot properly communicate with the servo DSP. They may be caused by instability of the XCBUSY connector (pin 8) of the mechanism-control computer, instability of the communication line between the mechanism-control computer and the servo DSP, or a defect in the servo DSP.

### (7) DVD Block Noise, etc.

Block noise and momentary picture freeze (\*) with a DVD are not regarded as errors, but the causes of these symptoms in the Servo system may be:

- (1) A search takes a long time (leading to a search error if it worsens).
- (2) Codes cannot be read clearly (leading to a code misread error if it worsens).

If the value to the right in the "ER: ○:○e-" indication displayed on the screen by pressing the ESC and DISP keys of the remote control in Test mode is greater than 5, the cause may be (1). If the value is less than 3, the cause may be (2).

- (\*) With a specific 2-layer disc with which playback continues from layer 1 to 2 or vice versa, the picture may be seen momentarily stop. This may be attributed to the performance of the player. Players of other manufacturers have the same symptoms to varying degrees.