Service Manual

TOP NEXT

AD0203069C2

Service Manual

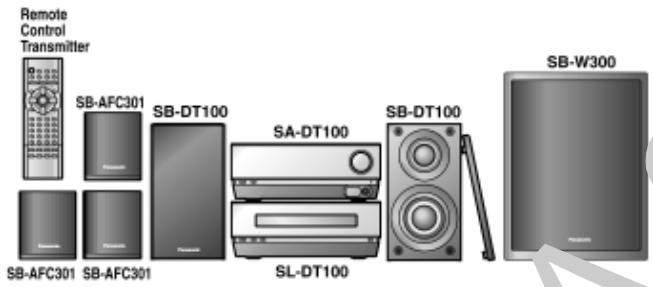
DVD/CD Player

- SL-DT100EG

Traverse Deck: RAE1813Z Mechanism Series

Colour

(S).....Silver Type



Because of unique interconnecting cables, when a compone requires service, send or bring in the entire system.

System	SC-DT100
DV CD player	**SL-DT100**
AV control receiver	SA-DT100
Front speakers*	SB-DT100
Center speaker*	SB-AFC301
Surround speakers*	SB-AFC301
Subwoofer*	SB-W300

* : Made in Singapore.

Specifications

Discs played

D -Video,
DVD-R (DVD-Video forma disc
CD (CD-DA), Vi D,
CD-R/RW (CD-DA, Video-CD, MP3 formatted s)

Audio

Number of channels: 5.1 (FL, SL, SR, C, SW)

Video

Signal system: AL, 60/NTSC
Output terminal: RC al (compo e video)
S terminal (Y, C)

Pickup

Beam source: S iconductor laser
Wavelength 658/790 nm

General

Dimensions (WxHxD): 190x73x335 mm
Mass: 1.8 kg

N s: Specifications are subject to change without notice.
Mass and dimensions are approximate.

Manufactured under license from Dolby Laboratories.
"Dolby", "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories.

Manufactured under license from Digital Theater Systems, Inc. US Pat. No. 5,451,942, 5,956,674, 5,974,380, 5,978,762 and other world-wide patents issued and pending. "DTS" and "DTS Digital Surround" are registered trademarks of Digital Theater Systems, Inc. © 1996, 2000 Digital Theater Systems, Inc. All rights reserved.

⚠ WARNING

This service information is designed for experienced repa technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise no chnical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

TOP NEXT

5.1 Self-diagnosis function and service mode

TOP PREVIOUS NEXT

Each results of self-diagnosis function and service mode is displayed on the LCD of AV control receiver (SA-DT100).
When using these function, confirm the unit to be connected by system cable.

Improving the self-diagnosis function

The self-diagnosis function in our DVD player currently in use is improved as follow:

Our DVD player currently in use	Our new DVD player	Remarks
UHF error display The latest error storage n=1	UHF error display The latest error storage n=20	The storage capacity is increased.
Jitter/read error display	Jitter/read error display Focus drive value display	The focus drive current value can be displayed.
Laser drive current display for DVD	Laser drive current display for DVD/CD	
----------	ADSC internal RAM data display	The servo learning value stored in the RAM data inside the ADSC (servo controller) IC is displayed.
----------	Total operation time display, SP motor, Laser (DVD/CD)	The operation times of SP motor and the laser (both for the DVD and CD) can be displayed.

TOP PREVIOUS NEXT

5.2 Service mode table

TOP PREVIOUS NEXT

Pressing various button combinations on the player and remote control unit can activate the service modes.

Item	Player mode and button combination	Function	Display	Cancellation method
Jitter check	In PLAY mode, press “STOP” button on the player and “5” button on the remote control unit.	Jitter check Jitter rate is measured and displayed. Measurement is repeatedly done in the cycle of one second. Read error counter starts from zero upon mode setting. When target block data failed to be readout, the counter advances by one increment. When the failure is caused by minor error, it may be corrected when retried to enable successful reading. In this case, the counter advances by one. When the error persists even after retry, the counter may jumpby two or more.	J*1_xxx*2_yyy*3_zz*4 *1: Jitter check display mode *2: Jitter rate *3: Readerror counter *4: Focus drive value Jitter rate is shown in decimal notation to one place of decimal. Focus drive value is shown in hexadecimal notation.	Press “STOP” button.
Error code check	Press “STOP” button on the player and “0” button on the remote control unit.	Error code check The latest error code stored in EEPROM is displayed.	Error code (play_err) is expressed in the following convention. Error code=0xDAXX is expressed→DVD nn UXX Error code=0xDBXX is expressed→DVD nn HXX Error code=0xDXXXis expressed→DVD nn FXXX Error code=0x0000 is expressed→ DVD nn F--- Error code except above→DVD nn XXXX *nn denotes the serial number of history.	Cancelled automatically 5 seconds later.
Initial setting of laser drive current	In STOP mode, press “STOP” button on the player and “PAUSE” button on the remote control unit.	Initial setting of laser drive current Initial current value for each of DVD and CD laser is separately saved in EEPROM.	LD0*1_034*2_028*3 *1: Laser current measurement mode *2: DVD laser current measurement *3:CD laser current measurement The value denotes the current in decimal notation. The above example shows the initial current is 34 mA and 28 mA for DVD and CD laser.	Cancelled automatically 5 seconds later.
DVD laser drive current measure-ment	In STOP mode, press “STOP” button on the player and “OSD” button on the remote control unit.	DVD laser drive current measurement DVD laser drive current is measured and the result is displayed together with the initial value stored in EEPROM. After the measurement, DVD laser emission is kept on. Itis turned off when Standby/on key is switched off. (It is also turned off when the primary power is switched off.)	LDD*1_034*2_032*3 *1: DVD laser current measurement mode *2: Initial current stored in EEPROM *3:Measured current The value denotes the current in decimal notation. The above example shows the initial current is 34 mA and the measured value is 32 mA.	Cancelled automatically 5 seconds later.
ADSC internal RAM data check	Press “STOP” button on the player and “1” or “2” buttons on the remote control unit.	ADSC internal RAM data check ADSC internal RAM data is read out and displayed. Change the address with “CANCEL” key operation to show the data for 11 addresses.	A*1_0FA*2_6901*3 *1: ADSC internal RAM data check mode *2: Address *3: RAM data for specifiedaddress The value is shown in hexadecimal notation. The above example shows the data in ADSC address 0FAh is 6901h.	Press “STOP” button.
CD laser drive current measure-ment	In STOP mode, press “STOP” button on the player and “3” button on the remote control unit.	CD laser drive current measurement CD laser drive current is measured and the result is displayed together with the initial value stored in EEPROM. After the measurement, CD laser emission is kept on. It isturned off when Standby/on key is switched off. (It is also turned off when the primary power is switched off.)	LDC*1_028*2_026*3 *1: CD laser current measurement mode *2: Initial current stored in EEPROM *3:Measured current The value denotes the current in decimal notation. The above example shows the initial current is 28 mA and the measured value is 26 mA.	Cancelled automatically 5 seconds later.

User initialization	In STOP mode, press “STOP” button on the player and “ ≧10” button on the remote control unit.	User initialization User setting are cancelled and player is initialized to factory setting.	“INITIALIZED”	
Region display	In STOP mode, press “STOP” button on the player and “6” button on the remote control unit.	Region display	x*1_yy*2_zzz*3 *1: Region No. *2: Video output format NN; NTSC PN; PAL (When playing NTSC disc:NTSC) P6;PAL (When playing NTSC disc: PAL60) *3: Model setting code	Cancelled automatically 5 seconds later.
Microcomputer & firmware version display	In STOP mode, Press “STOP” button on the player and “7” button on the remote control unit.	Microcomputer & firmware version display	xxxx*1_50yyyy*2 *1: Microcomputer version *2: Firmware version	Cancelled automatically 5 seconds later.
Region & firmware version display	In STOP mode, press “STOP” button on the player and “8” button on the remote control unit.	Region & firmware version display	x*1_50yyyy*2 *1: Region No. *2: Firmware version	Cancelled automatically 5 seconds later.
Timer 1 check	In STOP mode, press “STOP” button on the player and “ ▲” button on the remote control unit.	Timer 1 check Laser operation timer. Operation time is measured separately for DVD and CD laser.	T1_1234_5678 Shown to the left is DVD laser time, and to the right is CD laser time. Time is shown in 4 digits of decimal notation in a unit of 10 hours. “0000” will follow “9999”.	Cancelled automatically 5 seconds later.
Timer 1 reset	While displaying Timer 1 data, press “STOP” button on the player and “ ▼” button on the remote control unit.	Timer 1 reset Laser operation timer. Operation time is reset all at once for DVD and CD laser.	T1_0000_0000	Cancelled automatically 5 seconds later.
Timer 2 check	In STOP mode, press “STOP” button on the player and “ ▶” button on the remote control unit.	Timer 2 check Spindle motor operation timer.	T2_1234 Time is shown in 4 digits of decimal notation in a unit of 10 hours. “0000” will follow “9999”.	Cancelled automatically 5 seconds later.
Timer 2 reset	While displaying Timer 2 data, press “STOP” button on the player and “ ◀” button on the remote control unit.	Timer 2 reset Spindle motor operation timer.	T2_0000	Cancelled automatically 5 seconds later.

TOP PREVIOUS NEXT

5.3 DVD error code display

TOP PREVIOUS NEXT

Error Code	Error Content	Additional error explanation	Defect 1	Defect 2	Defect 3	Defect 4
U, H error						
U11	Focus error					
H01	Tray loading error					
H02	Spindle servo error	(Spindle servo, DSC SP motor, CLV servo error)				
H03	Traverse servo error					
H04	Tracking servo error					
H05	Seek error					
H06	Power error	Cannot switch off the power because of the panel and system computer communication error				
DSC related						
F500	DSC error	DSC stops in the occurrence of servo error (startup, focus error, etc.)	OPU	ADSC	FEP	servo drive
F501	DSC not Ready	DSC-system computer communication error (Communication failure caused by idling of DSC)	ADSC	CPU		
F502	DSC Time out error	Similar disposal as F500	OPU	ADSC	FEP	servo drive
F503	DSC communication Failure	Communication error (result error occurred although communication command was sent)	ADSC	FEP	EEPROM	
F505	DSC Attention error	Similar disposal as F500	OPU	ADSC	FEP	servo drive
F506	Invalid media	Disc is flipped over, TOC unreadable, incompatible disc	DISC	FEP	ADSC	ODC
ODC related						
F600	Access failure to management information caused by demodulation error	Operation stopped because navigation data is not accessible caused by the demodulation defect	ODC	FEP	ADSC	
F601	Indeterminate sector ID requested	Operation stopped caused by the request to access abnormal ID data	ODC	FEP	ADSC	
F602	Access failure to LEAD-IN caused by demodulation error	LEAD IN data unreadable				
F603	Access failure to KEYDET caused by demodulation error	Access failure to CSS data of disc				
F610	ODC abnormality	No permission for command execution	ODC			
F611	6626 QCODE don't read error	Access failure to seek address in CD series	ODC			
F612	No CRC OK for a specific time	Access failure to ID data in DVD series	ODC			
F630	No reply to KEY DET enquiry	(for internal use only)				
F631	CPPM KEY DET is not available till the FILE terminal	CPPM file system is unreadable caused by scratches	DISC	CPPM		
F632	CPPM KEY DET is not available	Been revoked or falsified	DISC	EEPROM	CPPM	
Disc code						
F103	Illegal highlight position	Every possibility of disc specification violation during highlight display	DISC			
IIC error						
F4FF	Force initialize failure (time out)		EEPROM	CPU	FEP	ADSC
Microcomputer error						
F700	MBX overflow	When replying message to disc manager	Firmware			

			bug			
F701	Message command does not end	Next message is sent before replying to disc manager	Firmware bug			
F702	Message command changes	Message is changed before it is sent as a reply to disc manager	Firmware bug			
F880	Task number is not appropriate	Message coming from a non-existing task (Stop the operation by error, need to correct firmware bug)	Firmware bug			
F890	Sending message when message is being sent to AV task	Sending message to AV task (Stop the operation by error, need to correct firmware bug)	Firmware bug			
F891	Message could not be sent to AV task	Begin sending message to AV task (Stop the operation by error, need to correct firmware bug)	Firmware bug			
F893	FROM falsification		FROM	CPU		
F894	EEPROM abnormality		EEPROM	Serial communi -cation line		
F8A0	Message command is not appropriate	Begin sending message to AV task (Stop the operation by error, need to correct firmware bug)	Firmware bug			

TOP PREVIOUS NEXT

5.4.1 How to display

1. Turn on the power.
2. Press “SELECT” button to select DVD.
3. With no disc on the unit, hold down “STOP” button for at least 2 seconds, and then press “

   ▶” button for at least 2 seconds.
4. A loading mechanism error code is displayed if any. Refer to Table 5-1. If there are multiple error, they can be successively by pressing “STOP” button.

5.4.2 Canceling self-diagnosis function

- Press the Standby/on button to turn off. And then press the Standby/on button again to turn it on again.
- The contents of self-diagnosis function are stored in memory. To re-display, perform the procedures “How to display”.

5.4.3 Clearing self-diagnosis function

- After repairing, continue to press “STOP” button for at least 5 seconds. And then “CLEAR” is displayed on the LCD about 2 seconds.
  (Clearing the contents of self-diagnosis function)

- Always be sure to clear memories after completing repair.

Table 5-1

Display code	Symptom	Cause
H15	When the disc tray opens, it closes by itself.	Disc tray open/close detect switch (S1001) fault. (Check and replace)
H16	When the disc tray closes, it opens by itself.	

TOP PREVIOUS NEXT

5.5 Last error code saved during NO PLAY

Error code	Error Content	System computer	Setting task	System computer internal error code
F0BF	6) Cannot playback because physical layer is not recognizable	PCND_NOPLAY PHYSICAL 0x50	DriveManager	0xD0BF
F0C0	8) DVD: Cannot playback because it is not DVD Video/Audio/VR	PCND_NOPLAY VIDEO 0x70	DiscManager	0xD0C0
F0C1	9) DVD: Prohibited by the restricted region code	PCND_NOPLAY RCD 0x80	DiscManager	0xD0C1
F0C2	A) DVD: PAL restricted playback	PCND_NOPLAY PAL 0x90	DiscManager	0xD0C2
F0C3	B) DVD: Parental lock setting prohibits the playback of the entire title	PCND_NOPLAY PTL 0xA0	DiscManager	0xD0C3
F0C4	C) VCD: Prohibited because it is in PHOTO CD format	PCND_NOPLAY PHOTO CD 0xB0	DiscManager	0xD0C4
F0C5	D) VCD/CD: Prohibited because it is CD-ROM without CD-DA	PCND_NOPLAY CDROM 0xC0	DiscManager	0xD0C5

TOP PREVIOUS NEXT

5.6 ADSC internal RAM data display

TOP PREVIOUS NEXT

The servo learning value in the RAM data inside the servo processor ADSC is displayed. The value is useful for the servo operation/disc quality judge including the OPU. The concrete contents are shown below.

Address	Content of display
4B4	Focus gain learning value for DVD-S, DVD-D(L0), CD and VCD
4BC	Focus gain learning value for DVD-D(L1)
4B6	Focus balance learning value for DVD-S, DVD-D(L0), CD and VCD
4BE	Focus balance learning value for DVD-D(L1)
4B5	Tracking gain learning value for DVD-S, DVD-D(L0), CD and VCD
4BD	Tracking gain learning value for DVD-D(L1)
TB0	Tracking balance learning value for DVD-S, DVD-D(L0), CD and VCD
TB1	Tracking balance learning value for DVD-D(L1)
DBD	DSL offset learning value for DVD-S and DVD-D
DBC	DSL offset learning value for CD and VCD
FC0	Equalizer FC value for DVD-S, DVD-D(L0), CD and VCD
BT0	Equalizer BOOST value for DVD-S, DVD-D(L0), CD and VCD
FC1	Equalizer FC value for DVD-D(L1)
BT1	Equalizer BOOST value for DVD-D(L1)

TOP PREVIOUS NEXT

5.7 Handling after completing repairs

Perform the following procedures after completing repairs.

1. Close the disc tray to press “

   ▲” button.

2. Turn off the power to press “Standby/on” button.

3. Disconnect an AC cord from the outlet.

Note:

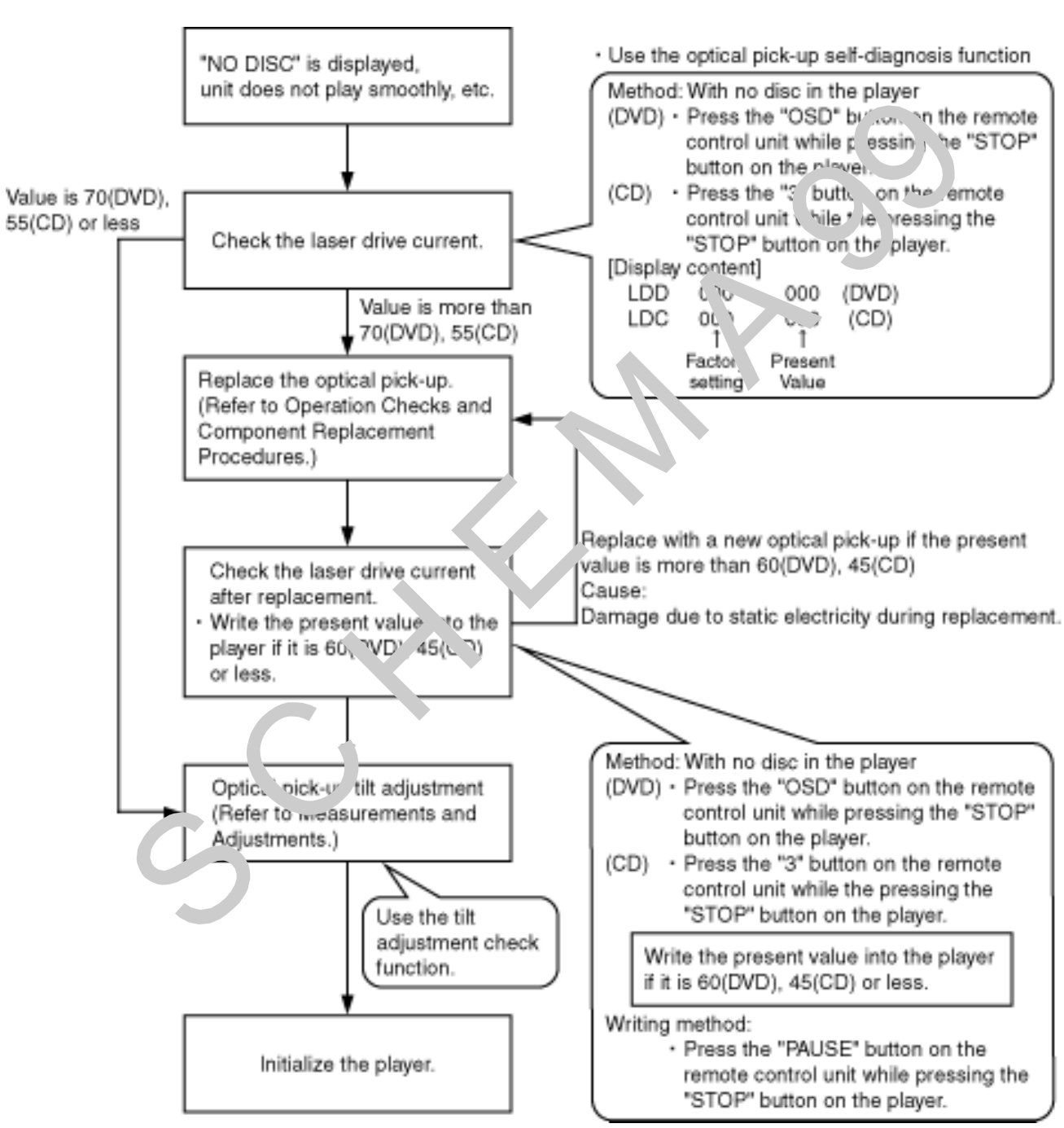
Do not disconnect an AC cord from the outlet with the disc tray is still opens, then close the disc tray manually.

6.1 Self-diagnosis

The optical pick-up self-diagnosis function and tilt adjustment check function have been included in this unit. When repairing, use the following procedure for effective self-diagnosis and tilt adjustment. Be sure to use the self-diagnosis functionbefore replacing the optical pick-up when “NO DISC” is displayed. As a guideline, you should replace the optical pick-up when the value of the laser drive current is more than 70(DVD), 55(CD).

Note:

Press the Standby/on button to turn on the power, and check the value within three minutes before the unit warms up. (Otherwise, the unit will be incorrect.)



6.2 Caution to be used before replacing the optical pick-up unit and spindle motor assembly

Before replacing the optical pick-up unit and spindle motor assembly, check the total using hours for each of them. The checking method is as follows:

Item	Play mode and button combination	Display
Using hours of DVD and CD laser	Press “ ▲” button on the remote control unit while pressing the “STOP” button on the player.	T1_xxxx_yyyy xxxx(DVD), yyyy(CD): Time is shown in 4 digits of decimal notation in a unit of 10 hours.
Using hours of spindle motor	Press “ ▶” button on the remote control unit while pressing the “STOP” button on the player.	T2_xxxx xxxx: Time is shown in 4 digits of decimal notation in a unit of 10 hours.
Resetting using hours of DVD and CD laser	Press “ ▼” button on the remote control unit while pressing the “STOP” button on the player.	T1_0000_0000
Resetting using hours of spindle motor	Press “ ◀” button on the remote control unit while pressing the “STOP” button on the player.	T2_0000

6.2.1 Caution to be taken when replacing the optical pick-up

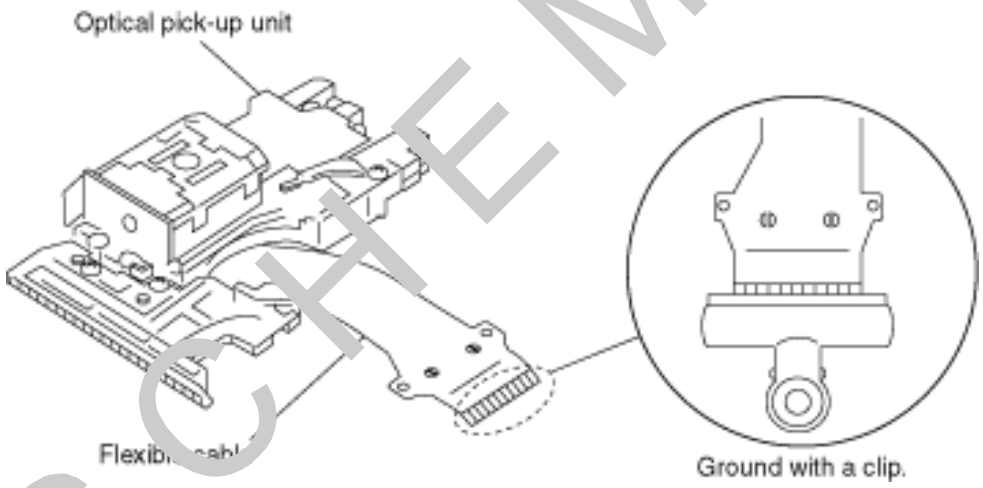
6.2.1 Caution to be taken when replacing the optical pick-up

The optical pick-up may break down due to the static electricity of human body. Take proper protection measures against static electricity before repairing the parts around the optical pick-up. Refer to “Handling Precaution for TraverseDeck”.

- Do not touch the area around the laser diode and actuator.
- Do not judge the laser diode with a tester.
- It is recommended to use an antistatic soldering iron for short-circuit or removing the laser diode.
  (Recommended soldering iron) HAKKO ESD Product
- Solder the land of the flexible cable in the optical pick-up.

Note:

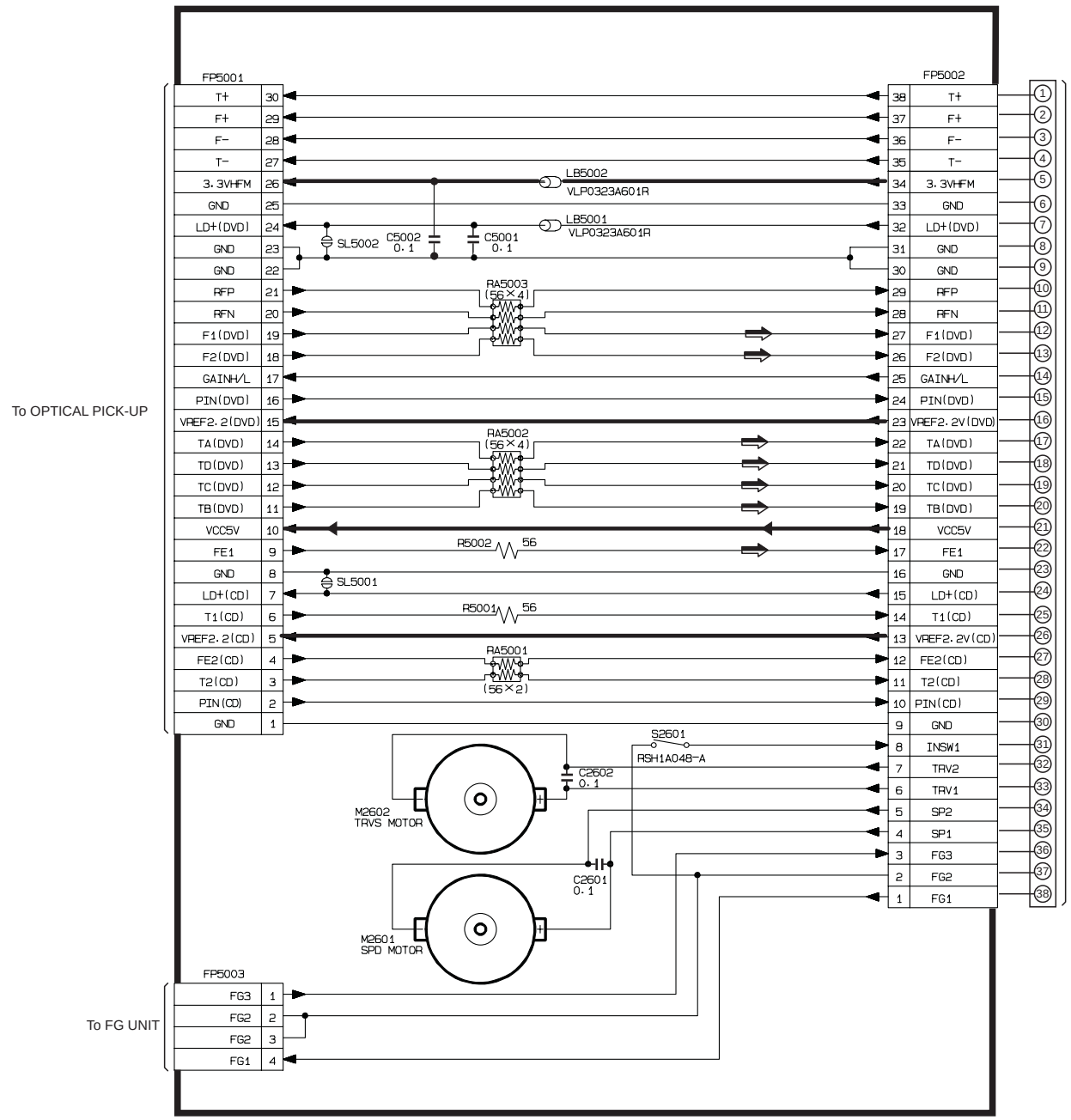
When using a soldering iron which is not antistatic, short-circuit the terminal of the flexible cable first. After that, short the land.



NOTE:
The number which noted at the connectors on the schematic diagram as
"SCHEMATIC DIAGRAM-1" or "SCHEMATIC DIAGRAM-2"
indicates the schematic diagram serial number located on the left corner in the schematic diagram.

A TERMINAL SERVO CIRCUIT

:POSITIVE VOLTAGE LINE :VIDEO/AUDIO SIGNAL LINE

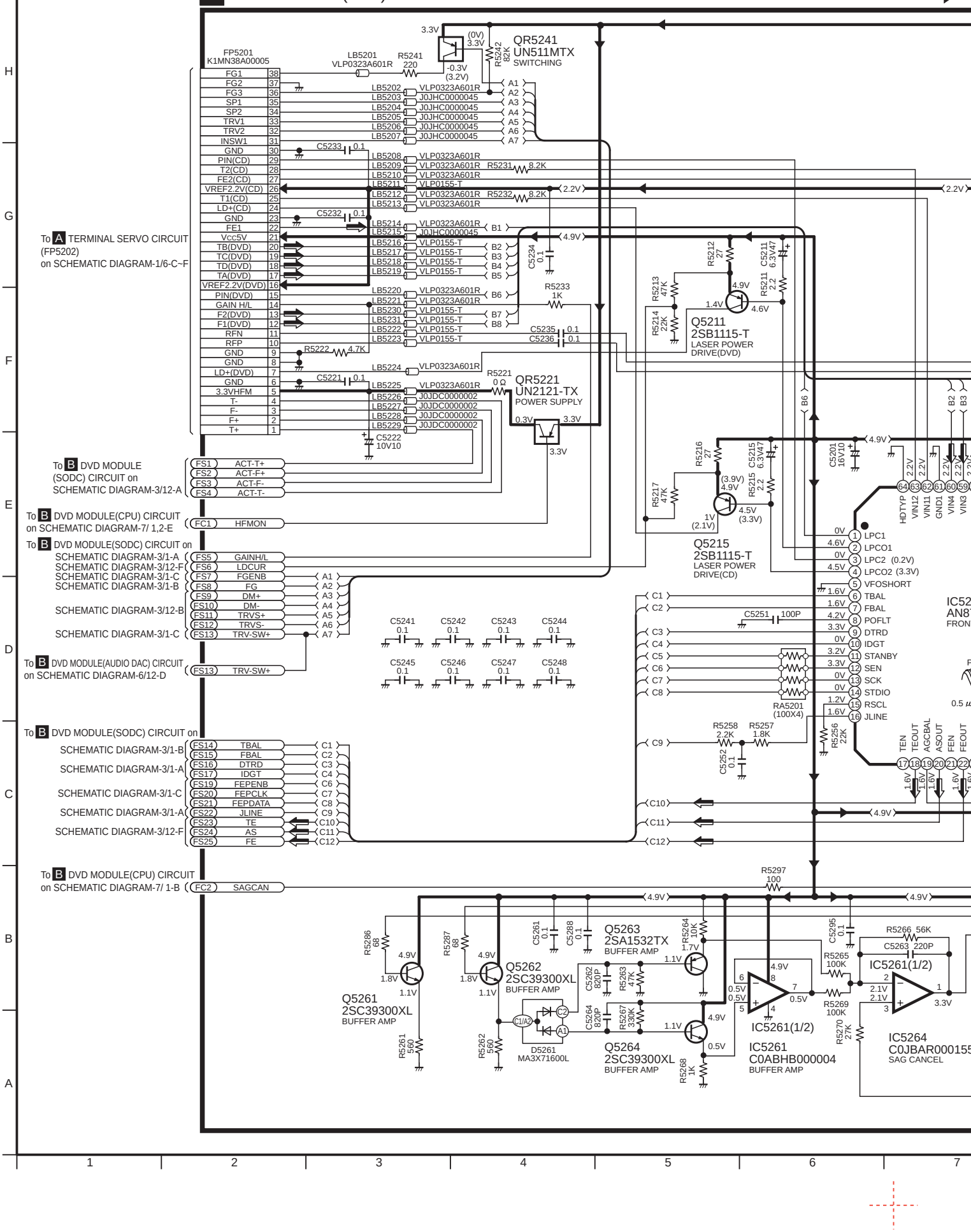


SL-DT100(EG) TERMINAL SERVO CIRCUIT DIAGRAM

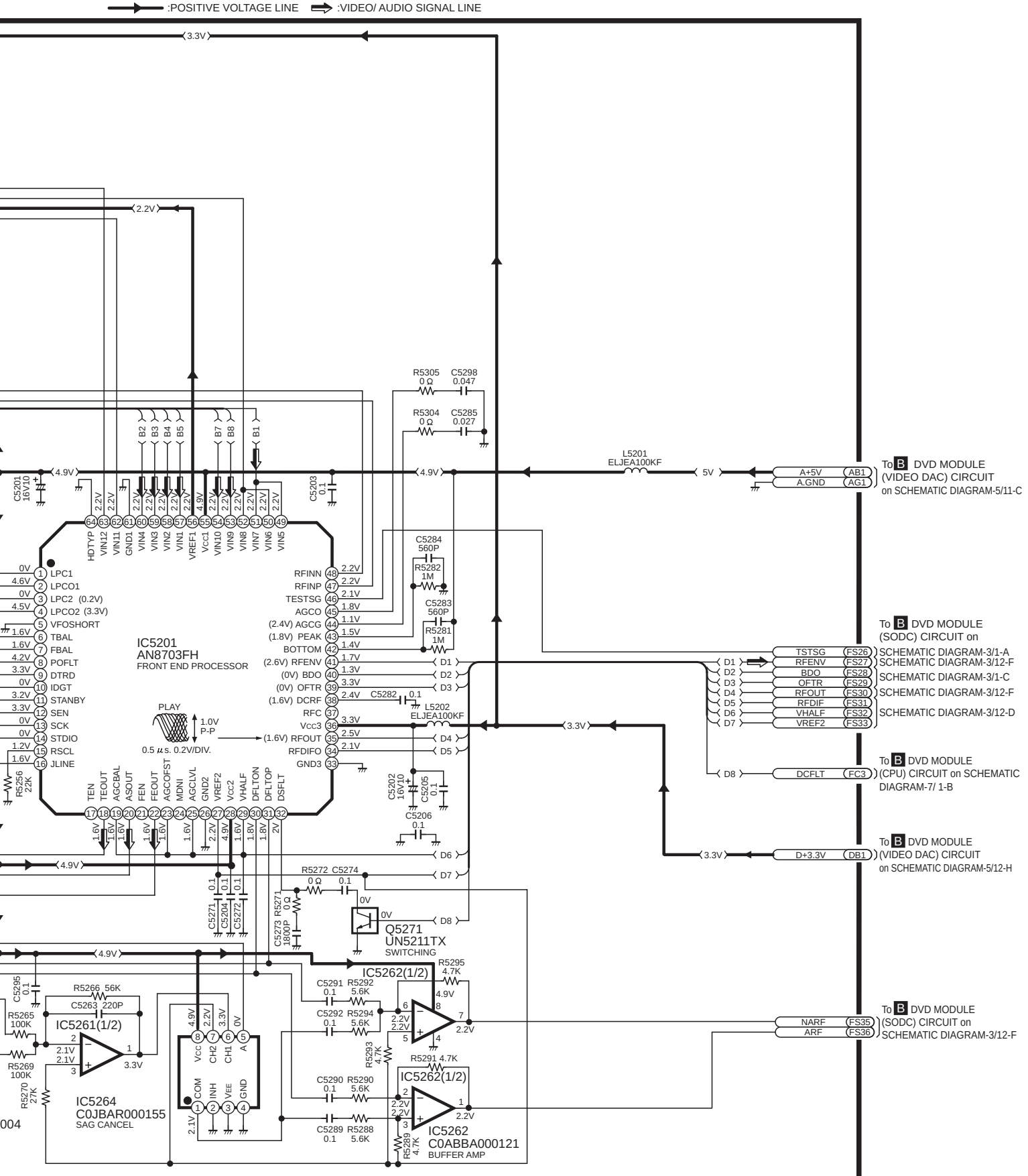
To B DVD MODULE(FEP) CIRCUIT
(FP5201) on SCHEMATIC DIAGRAM–2/2-F~H

SCHEMATIC DIAGRAM-2

B DVD MODULE(FEP) CIRCUIT



:POSITIVE VOLTAGE LINE :VIDEO/ AUDIO SIGNAL LINE

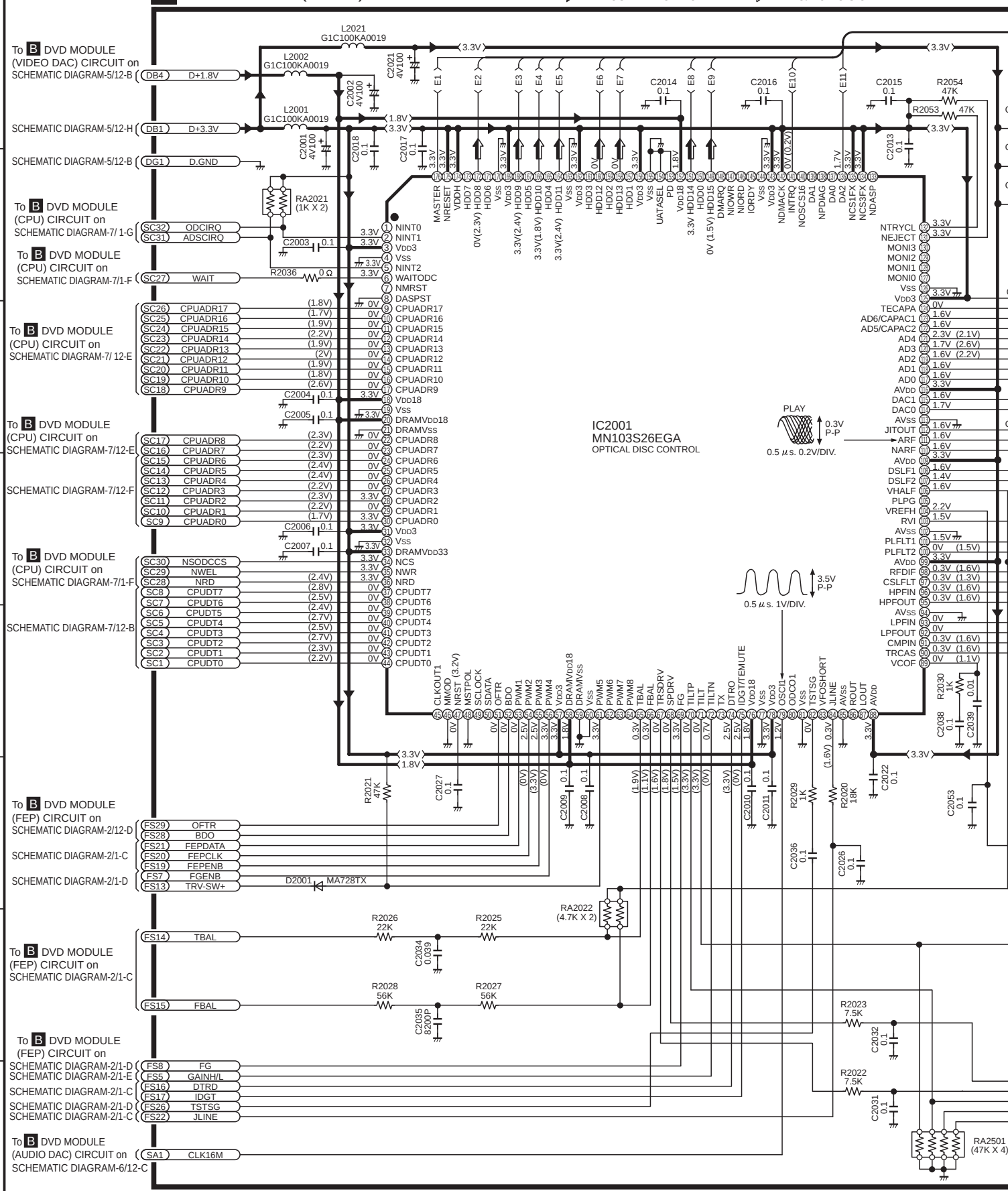


SL-DT100(EG) DVD MODULE(FEP) CIRCUIT DIAGRAM

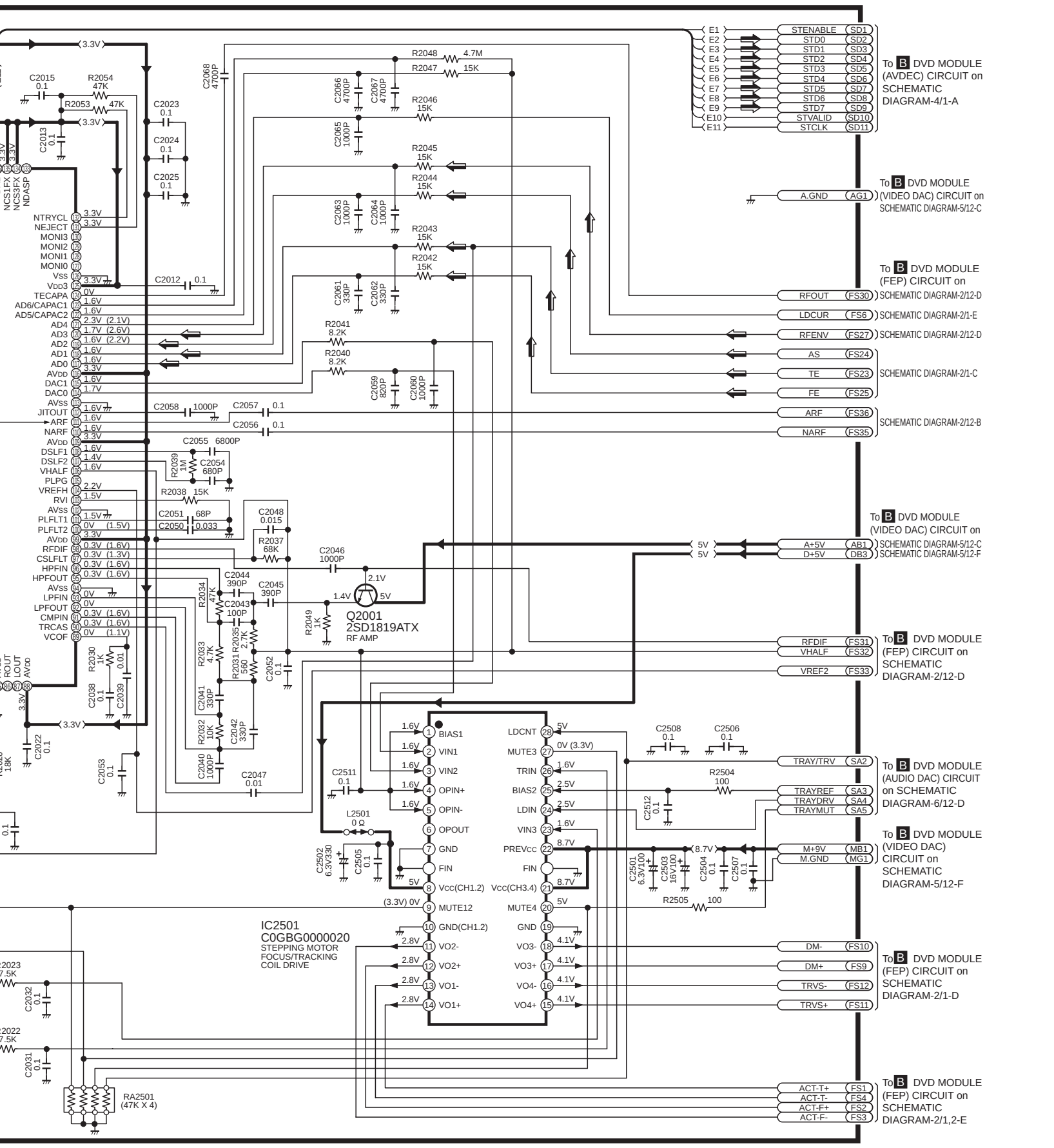
SCHEMATIC DIAGRAM-3

B DVD MODULE(SODC) CIRCUIT

:POSITIVE VOLTAGE LINE :VIDEO/ AUDIO SIGNAL LINE



SIGNAL LINE

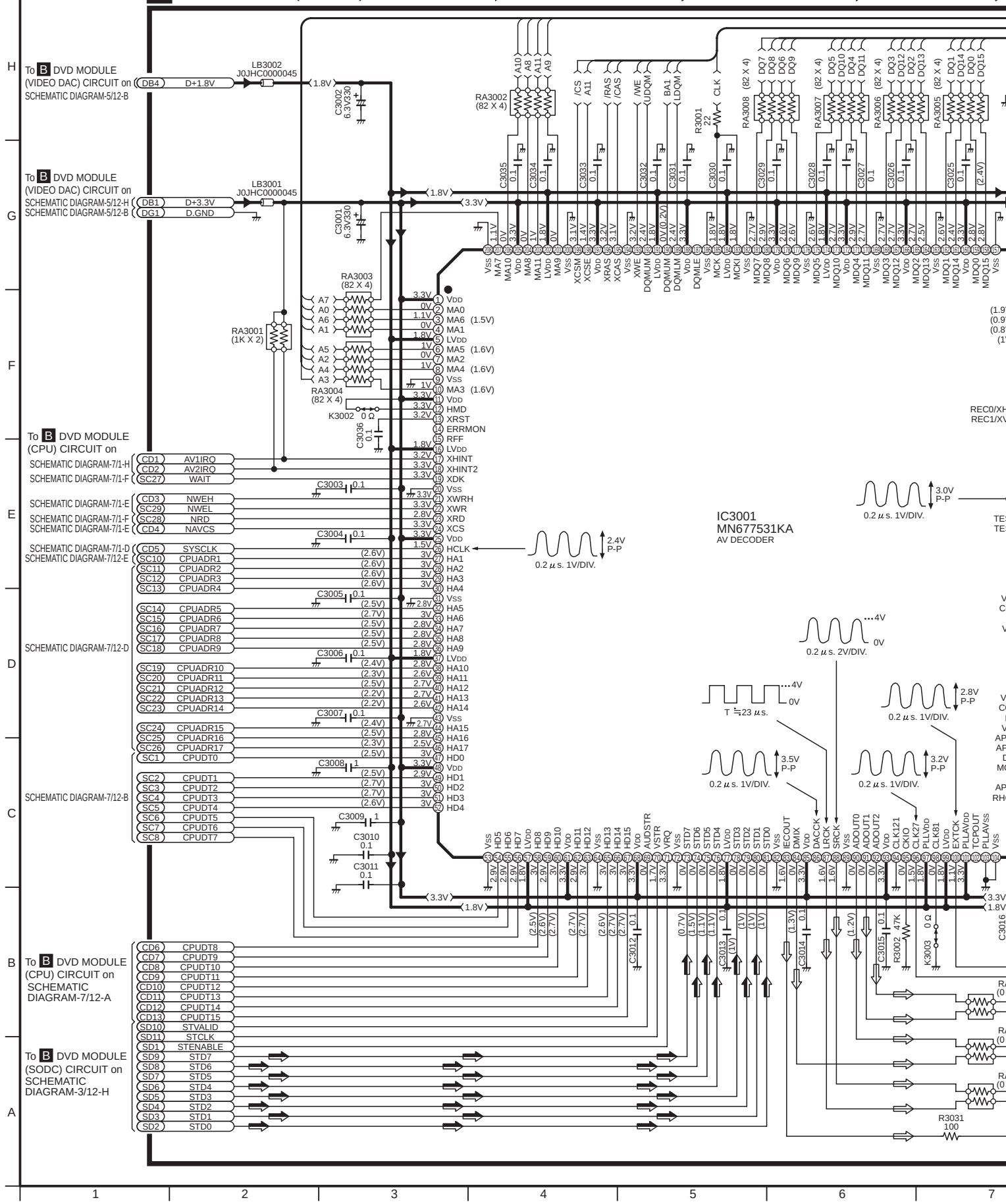


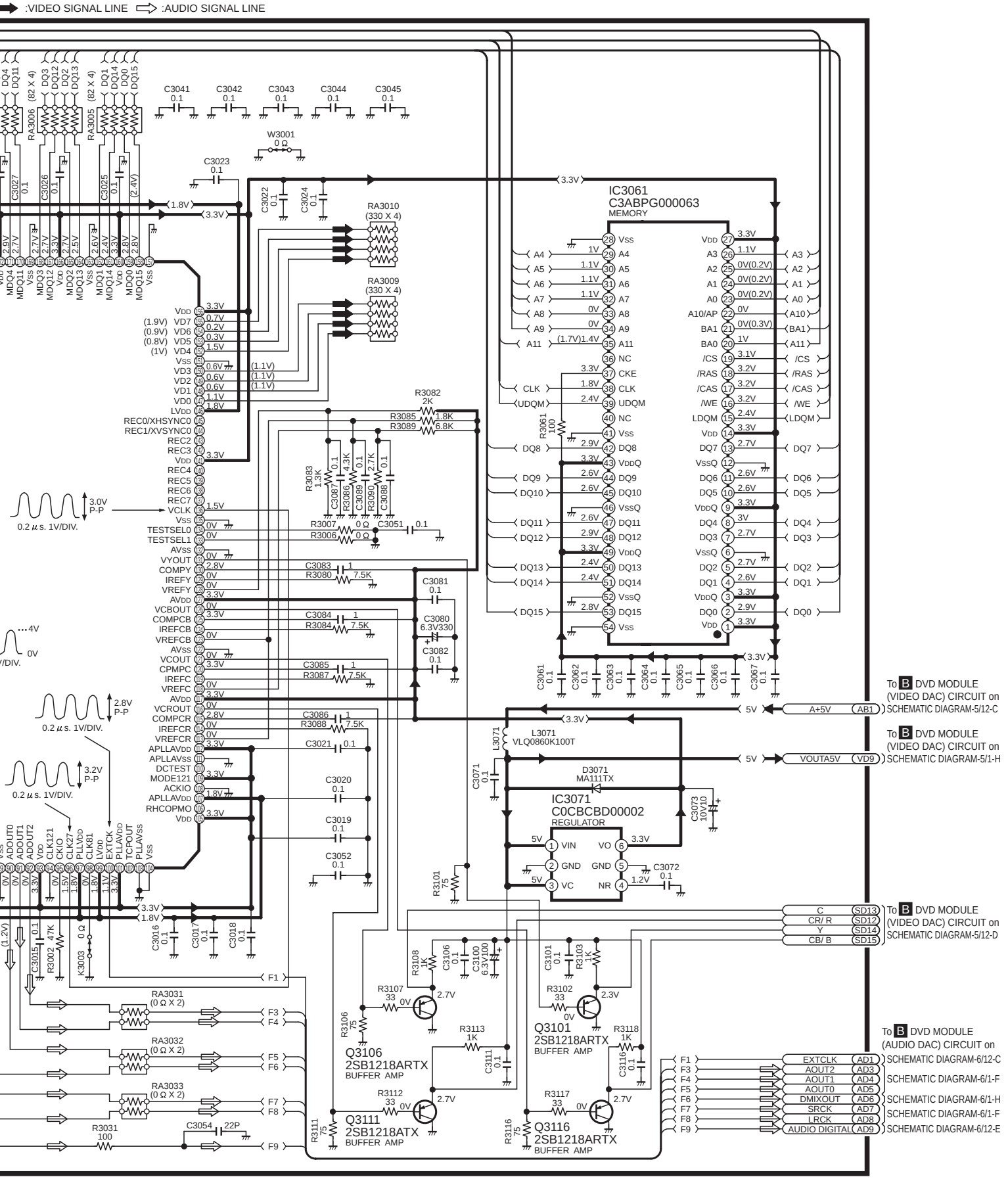
SL-DT100(EG) DVD MODULE(SODC) CIRCUIT DIAGRAM

SCHEMATIC DIAGRAM-4

B DVD MODULE(AVDEC) CIRCUIT

:POSITIVE VOLTAGE LINE :VIDEO/ AUDIO SIGNAL LINE :VIDEO SIGNAL LINE



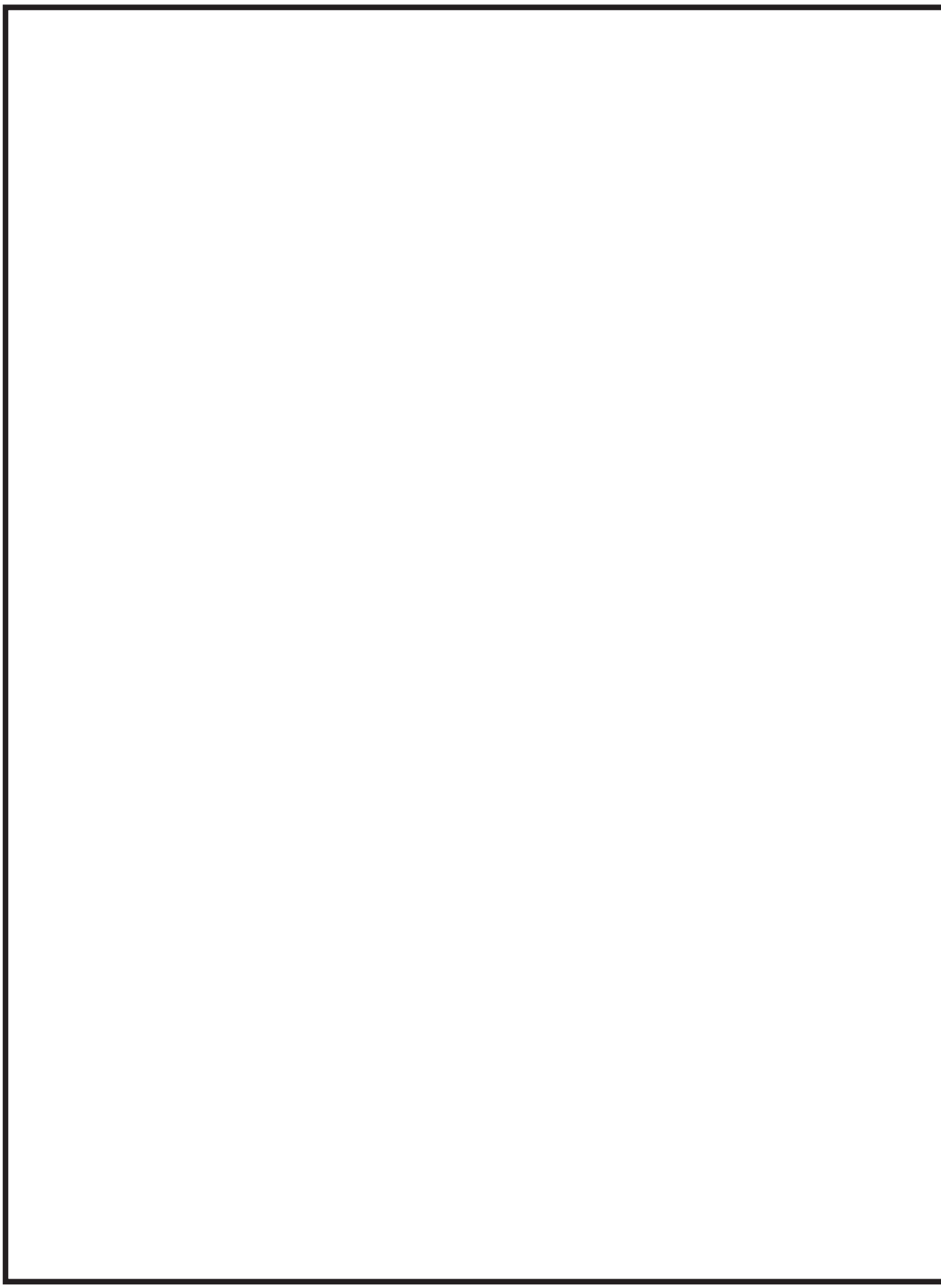


SL-DT100(EG) DVD MODULE(AVDEC) CIRCUIT DIAGRAM

SCHEMATIC DIAGRAM-5

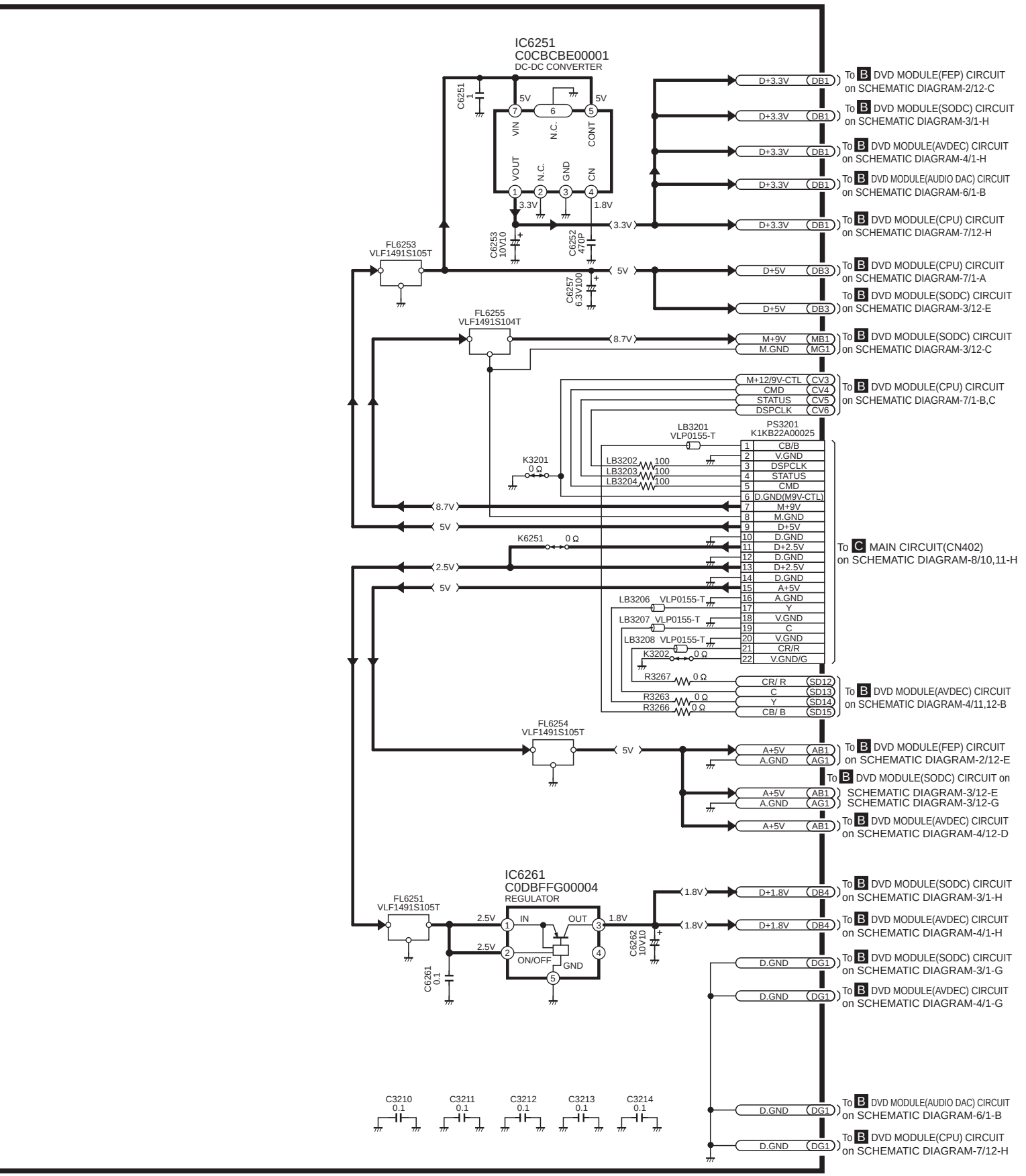
B DVD MODULE(VIDEO DAC) CIRCUIT

:POSITIVE VOLTAGE LINE :VIDEO SIGNAL LINE



H G F E D C B A

1 2 3 4 5 6 7

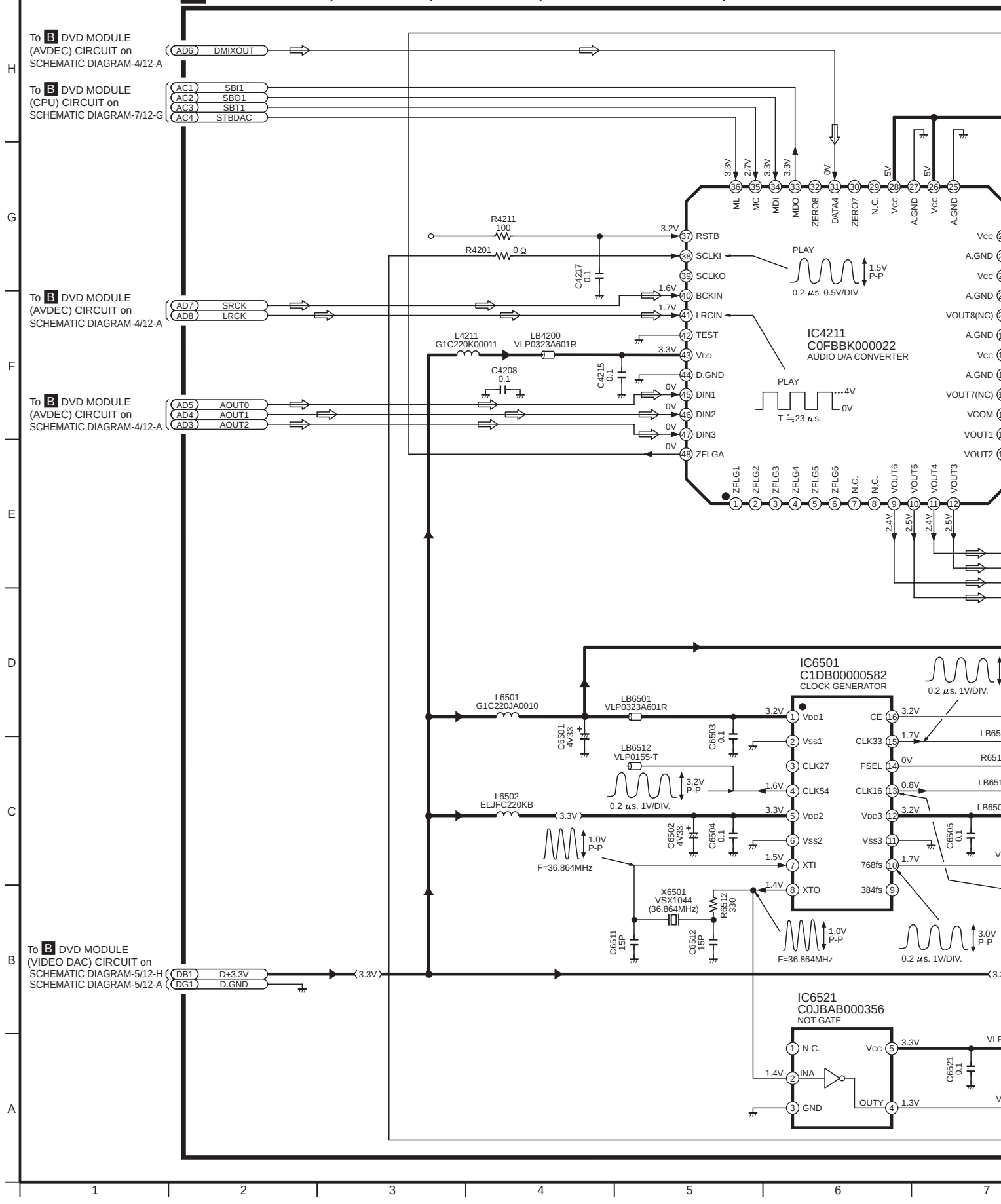


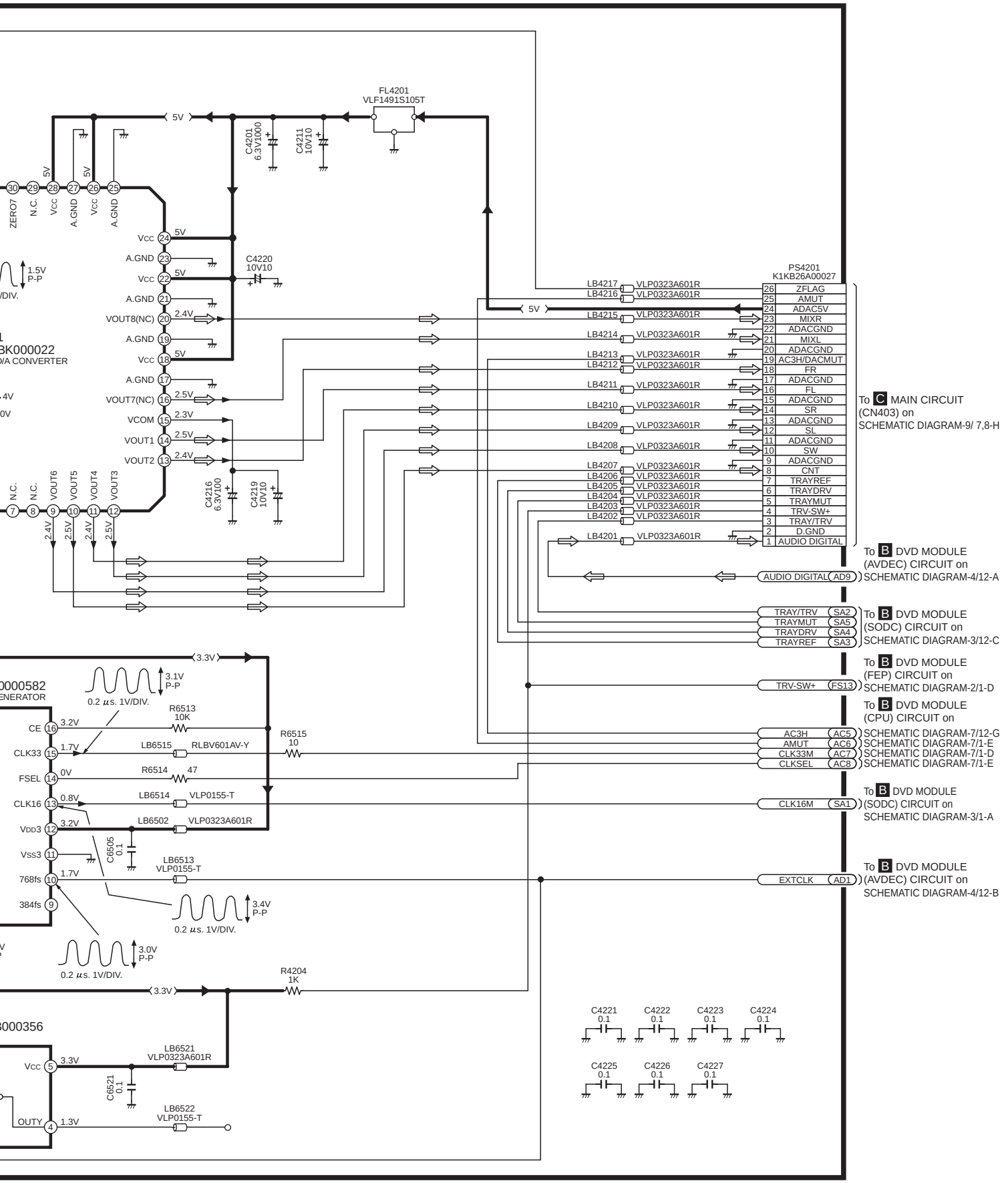
SL-DT100(EG) DVD MODULE(VIDEO DAC) CIRCUIT DIAGRAM

SCHEMATIC DIAGRAM-6

B DVD MODULE(AUDIO DAC) CIRCUIT

:POSITIVE VOLTAGE LINE :AUDIO SIGNAL LINE



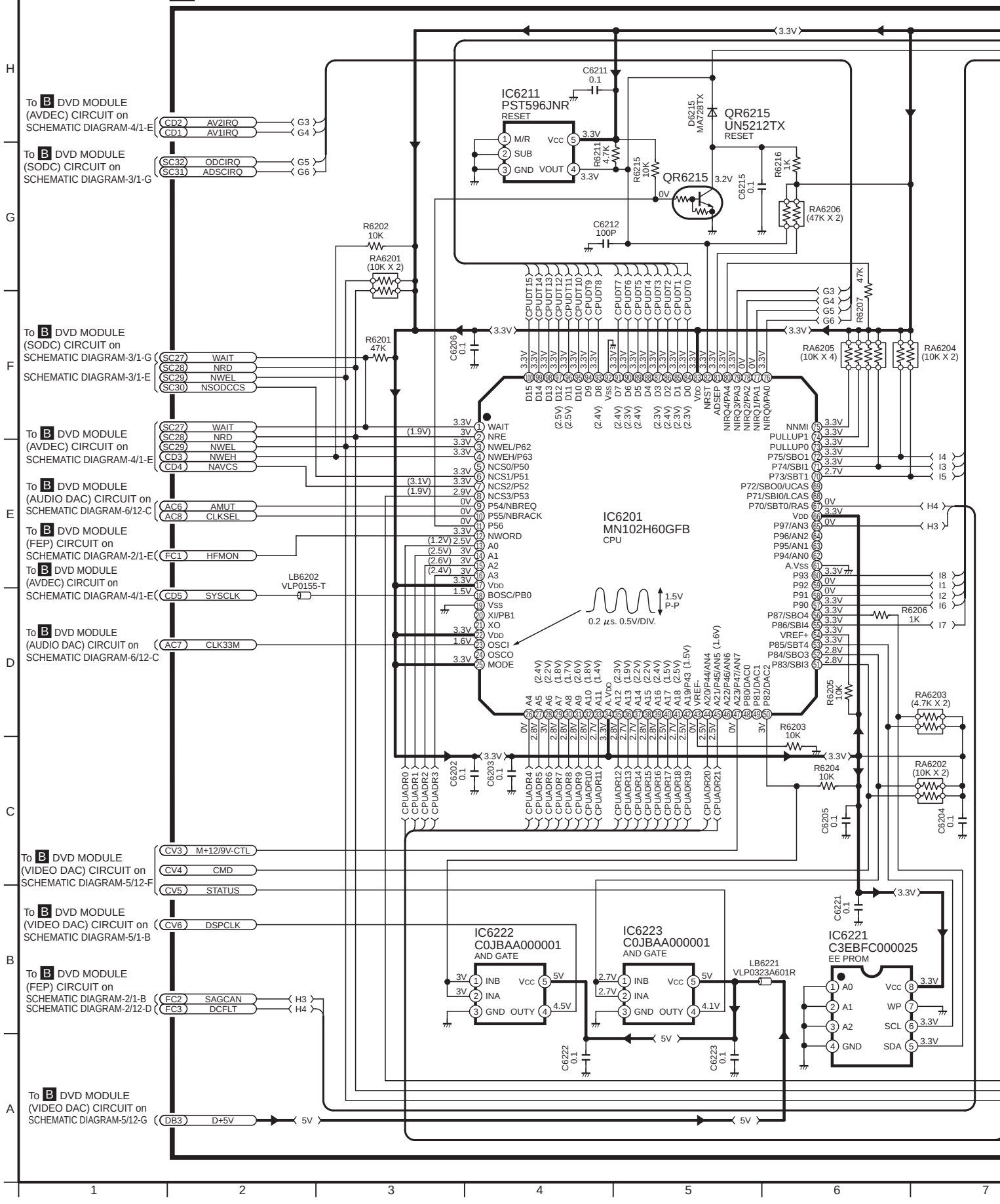


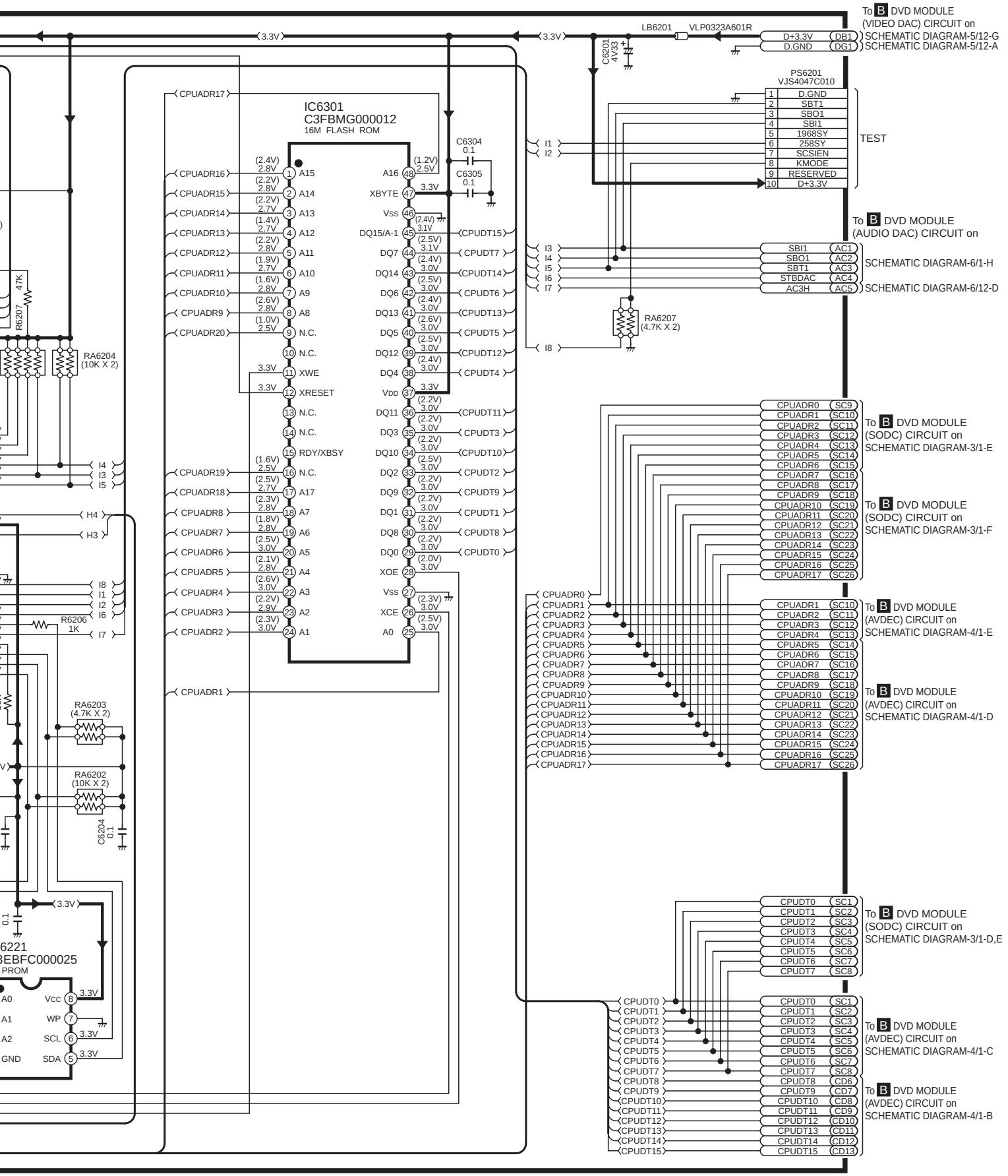
SL-DT100(EG) DVD MODULE(AUDIO DAC) CIRCUIT DIAGRAM

SCHEMATIC DIAGRAM–7

B DVD MODULE(CPU) CIRCUIT

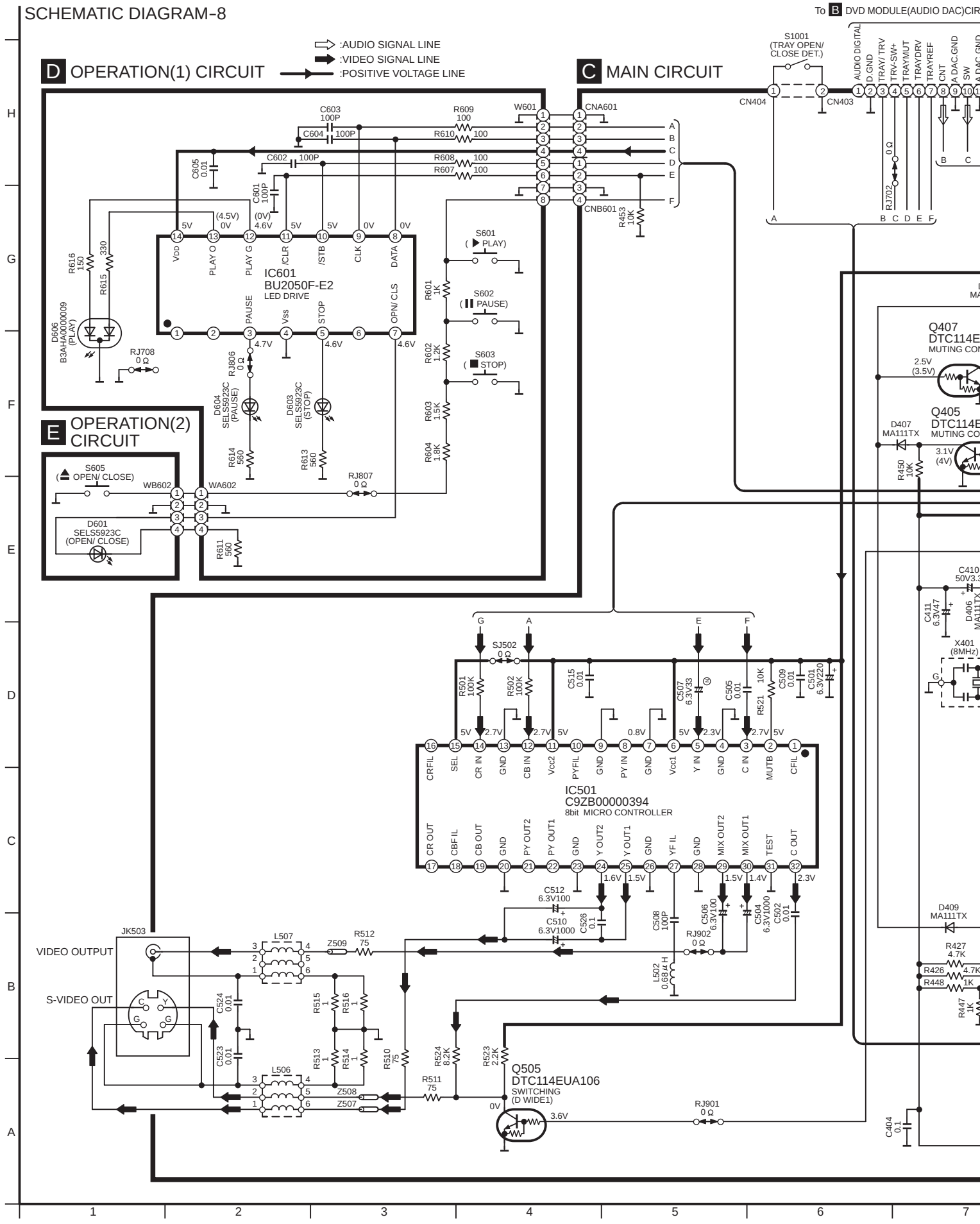
:POSITIVE VOLTAGE LINE

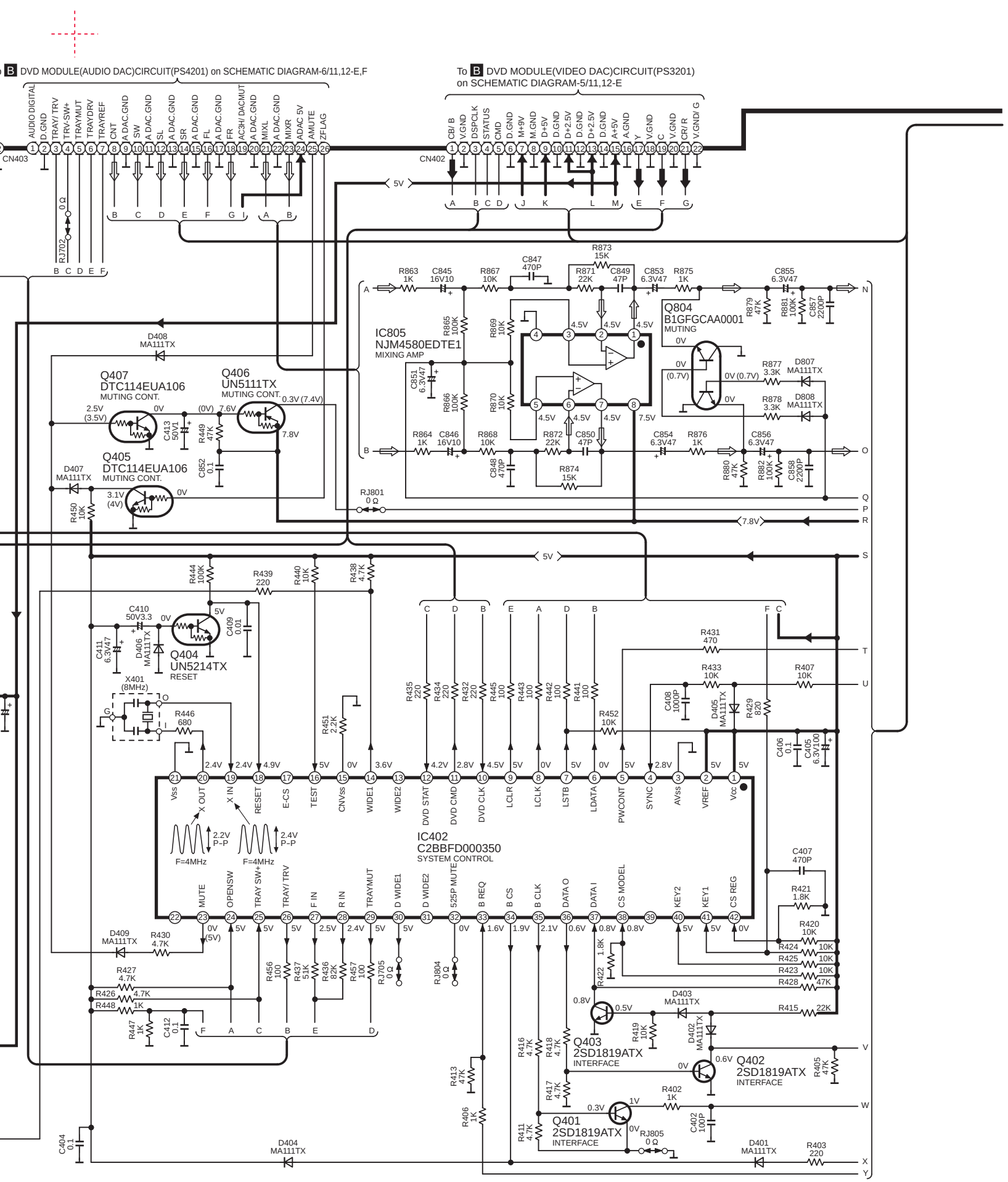




SL-DT100(EG) DVD MODULE(CPU) CIRCUIT DIAGRAM

SCHEMATIC DIAGRAM-8

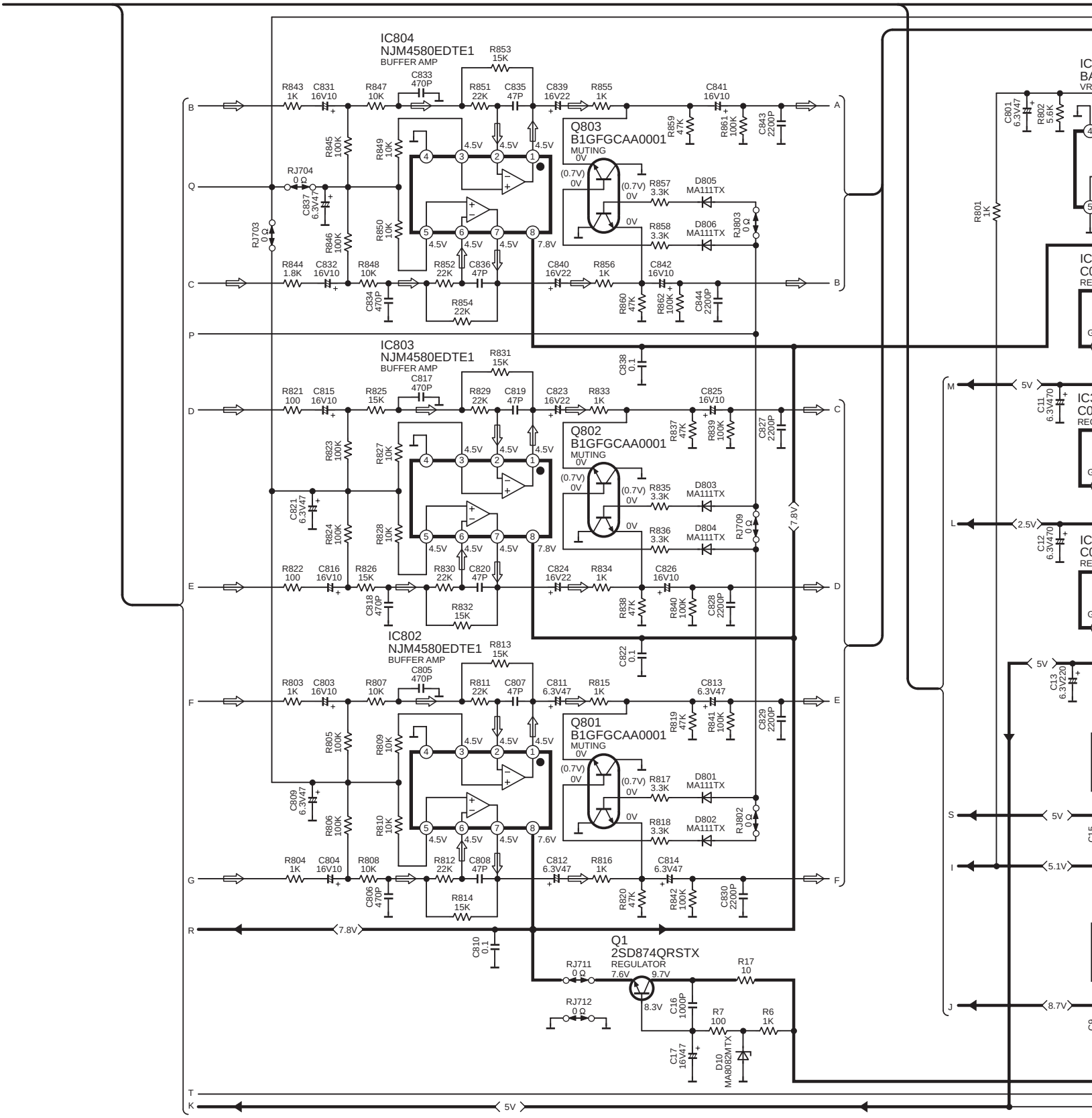



B DVD MODULE(AUDIO DAC)CIRCUIT(PS4201) on SCHEMATIC DIAGRAM-6/11,12-E,F
To B DVD MODULE(VIDEO DAC)CIRCUIT(PS3201) on SCHEMATIC DIAGRAM-5/11,12-E
CN403
CN402
IC805
NJM4580EDTE1
MIXING AMP
Q804
B1GFGCAA0001
MUTING
Q407
DTC114EUA106
MUTING CONT.
Q406
UN5111TX
MUTING CONT.
Q405
DTC114EUA106
MUTING CONT.
Q404
UN5214TX
RESET
IC402
C2BBFD000350
SYSTEM CONTROL
Q403
2SD1819ATX
INTERFACE
Q402
2SD1819ATX
INTERFACE
Q401
2SD1819ATX
INTERFACE
X401
(8MHz)
F=4MHz
F=4MHz
RJ702
RJ801
RJ804
RJ805
5V
7.8V

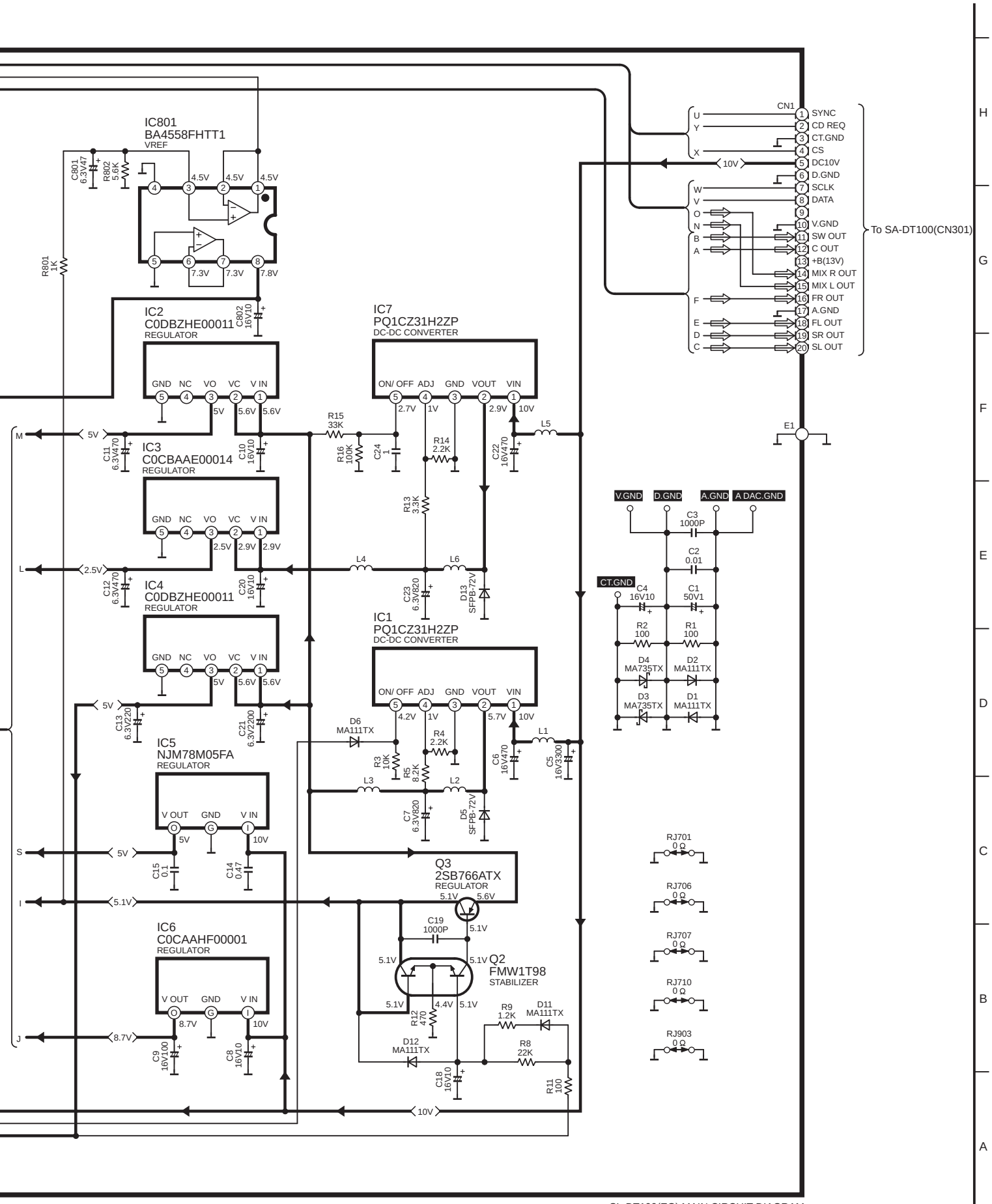
SCHEMATIC DIAGRAM–9

C MAIN CIRCUIT

:POSITIVE VOLTAGE LINE :AUDIO SIGNAL LINE



13	14	15	16	17	18



SL-DT100(EG) MAIN CIRCUIT DIAGRAM

8.1 Firmware updating and recovery with disc

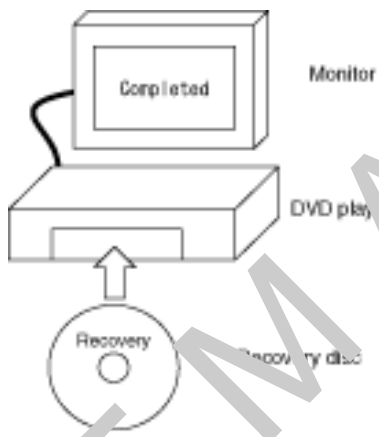
- Recovery
- Firmware updating

  Simply run the recovery disc. Then both of the above operations are automatically performed.

  Commercially available CD-R can now perform updating and recovery process, making it easier to update the version.

  Recovery process: Optimization of player after replacement of FROM, EEPROM and module P.C.B.

  Version updating: Firmware updating for improved operability and performance



8.2 New self-diagnosis function

- Cumulative operation time display function (Spindle motor and DVD/CD laser)
- ADSC internal RAM display function
- Other: Increased number of last errors storage

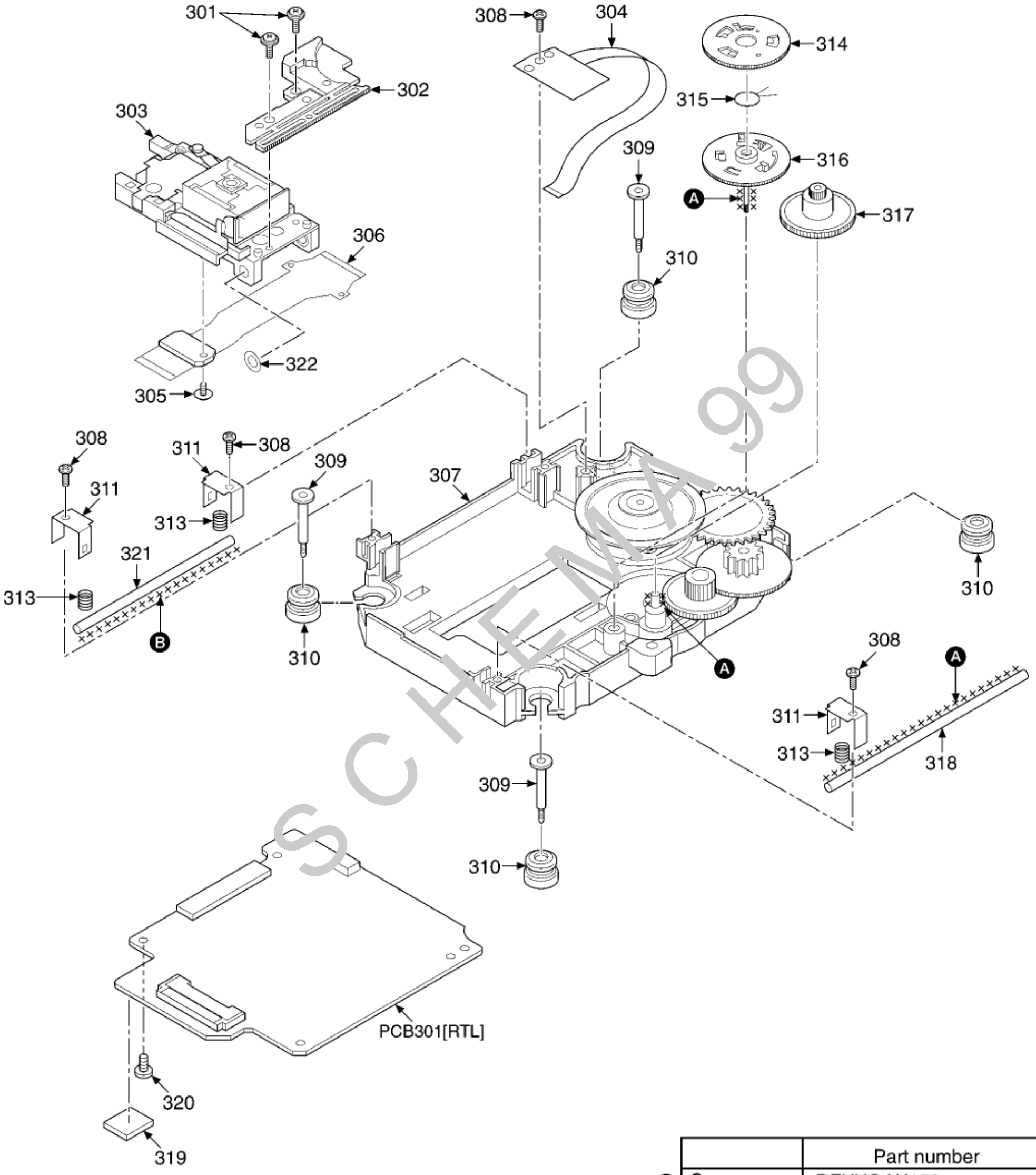
  1 event →20 events

  Utilization of the above functions, in combination with servicing procedures, is expected to contribute to higher efficiency of fault diagnosis.

[Purposes]

Operation time display function: For fault finding of spindle motor or laser that has limited service life

ADSC internal RAM display function: For faulty part identification in servo system using the learned values



		Part number
A	Grease	RFKXGAK152
B	Oil	JZS0648