

DVP-NS900V

RMT-D139P/D140A/D140E/D140P

SERVICE MANUAL

Self Diagnosis
Supported model



Photo: Titanium gray type

*US Model
Canadian Model
AEP Model
UK Model
Russian Model
Mexico Model
Hong Kong Model
Korea Model*

SPECIFICATIONS

System

Laser Semiconductor laser
Signal format system NTSC/PAL

Audio characteristics

Frequency response DVD (PCM 96 kHz): 2 Hz to 44 kHz (−2 dB ± 1 dB at 44 kHz)
SACD: 2 Hz to 100 kHz (−3 dB ± 1 dB at 50 kHz)
CD: 2 Hz to 20 kHz (±0.5 dB)
Signal-to-noise ratio (S/N ratio) 115 dB (DVD VIDEO) (AUDIO OUT L/R 1/2 jacks only)
Harmonic distortion 0.002 %
Dynamic range DVD VIDEO/SACD: 103 dB
CD: 99 dB
Wow and flutter Less than detected value (±0.001% W PEAK)

Outputs

Jack name	Jack type	Output level	Load impedance
AUDIO OUT L/R	Phono jack	2 Vrms (at 50 kilohms)	Over 10 kilohms
DIGITAL OUT (OPTICAL)	Optical output jack	−18 dBm	Wave length: 660 nm
DIGITAL OUT (COAXIAL)	Phono jack	0.5 Vp-p	75 ohms terminated
5.1CH OUTPUT	Phono jack	2 Vrms (50 kilohms)	Over 10 kilohms
COMPONENT VIDEO OUT(Y, Pb/Cb, Pr/Cr)	Phono jack	Y: 1.0 Vp-p Pb/Cb, Pr/Cr: 0.7 Vp-p	75 ohms, sync negative 75 ohms
VIDEO OUT	Phono jack	1.0 Vp-p	75 ohms, sync negative
S VIDEO OUT	4-pin mini DIN	Y: 1.0 Vp-p C: 0.3 Vp-p (PAL) 0.286 Vp-p (NTSC)	75 ohms, sync negative 75 ohms terminated
PHONES	Phone jack	12mW	32 ohms

General

Power requirements 120 V AC, 60 Hz (US, CND, MX)
220 to 240 V AC, 50/60 Hz (AEP, UK, RUS)
220 V AC, 60 Hz (HK, KR)
See page 2 for further information.
Power consumption 25 W (AEP, UK, RUS)
26 W (EXCEPT AEP, UK, RUS)
Dimensions (approx.) 430 × 113 × 343 mm (w/h/d) incl. projecting parts
Mass (approx.) 5.3 kg
Operating temperature 5 °C to 35 °C
Operating humidity 25 % to 80 %

Supplied accessories

- Check that you have the following items:
- Audio/video cord (pinplug × 3 ↔ pinplug × 3) (1)
 - S VIDEO cord (1)
 - Remote commander (remote) RMT-D139P (1) (AEP1, AEP3, UK1, RUS)
 - Remote commander (remote) RMT-D140A (1) (US, CND, MX)
 - Remote commander (remote) RMT-D140E (1) (HK, KR)
 - Remote commander (remote) RMT-D140P (1) (AEP2, UK2)
 - Size R6 (AA) batteries (2)

Specifications and design are subject to change without notice.

- Abbreviation
CND : Canadian
HK : Hong Kong
KR : Korea
MX : Mexican
RUS : Russian

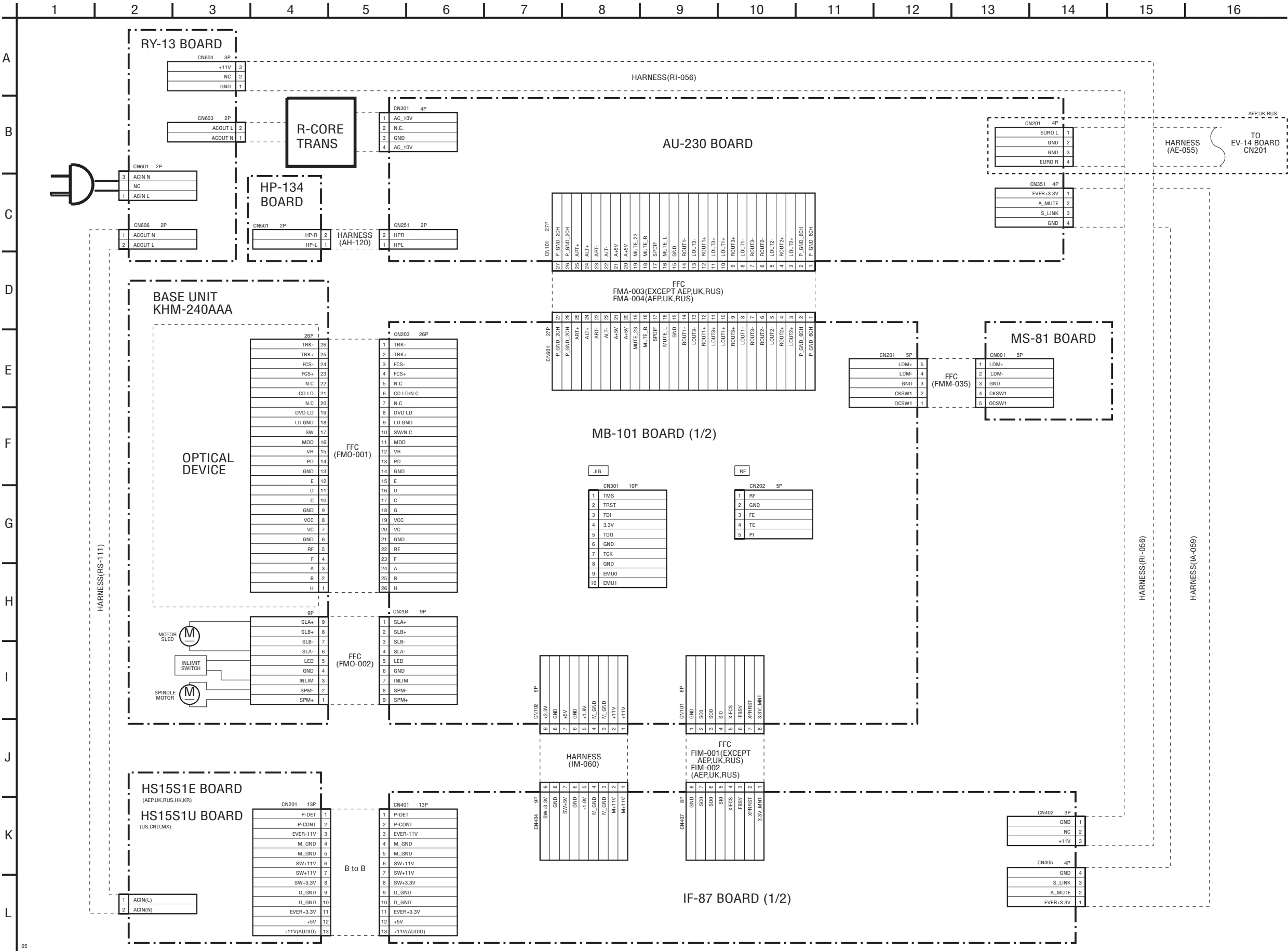


SACD/DVD PLAYER

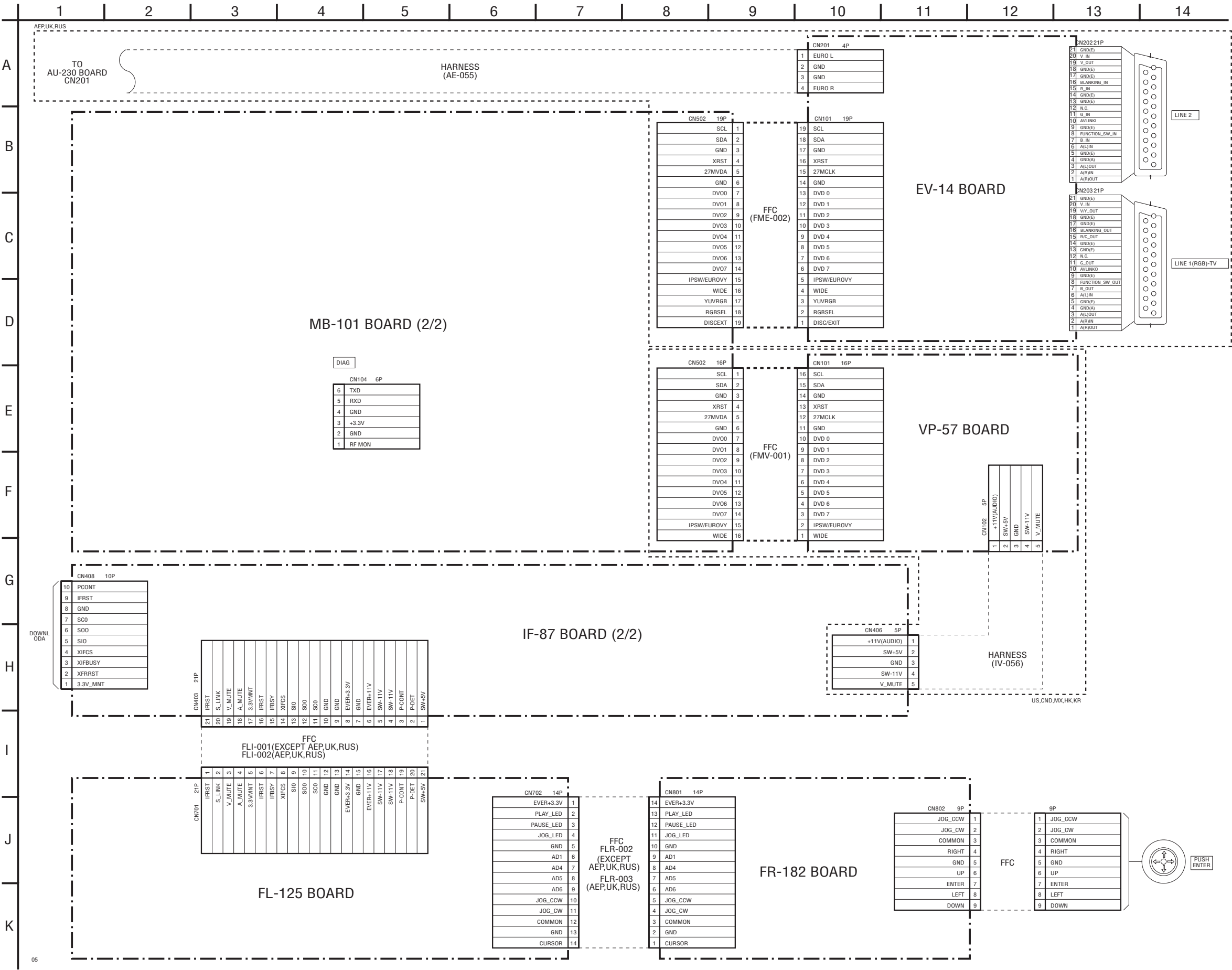
SONY®

4-1. FRAME SCHEMATIC DIAGRAM

FRAME (1)



FRAME (2)

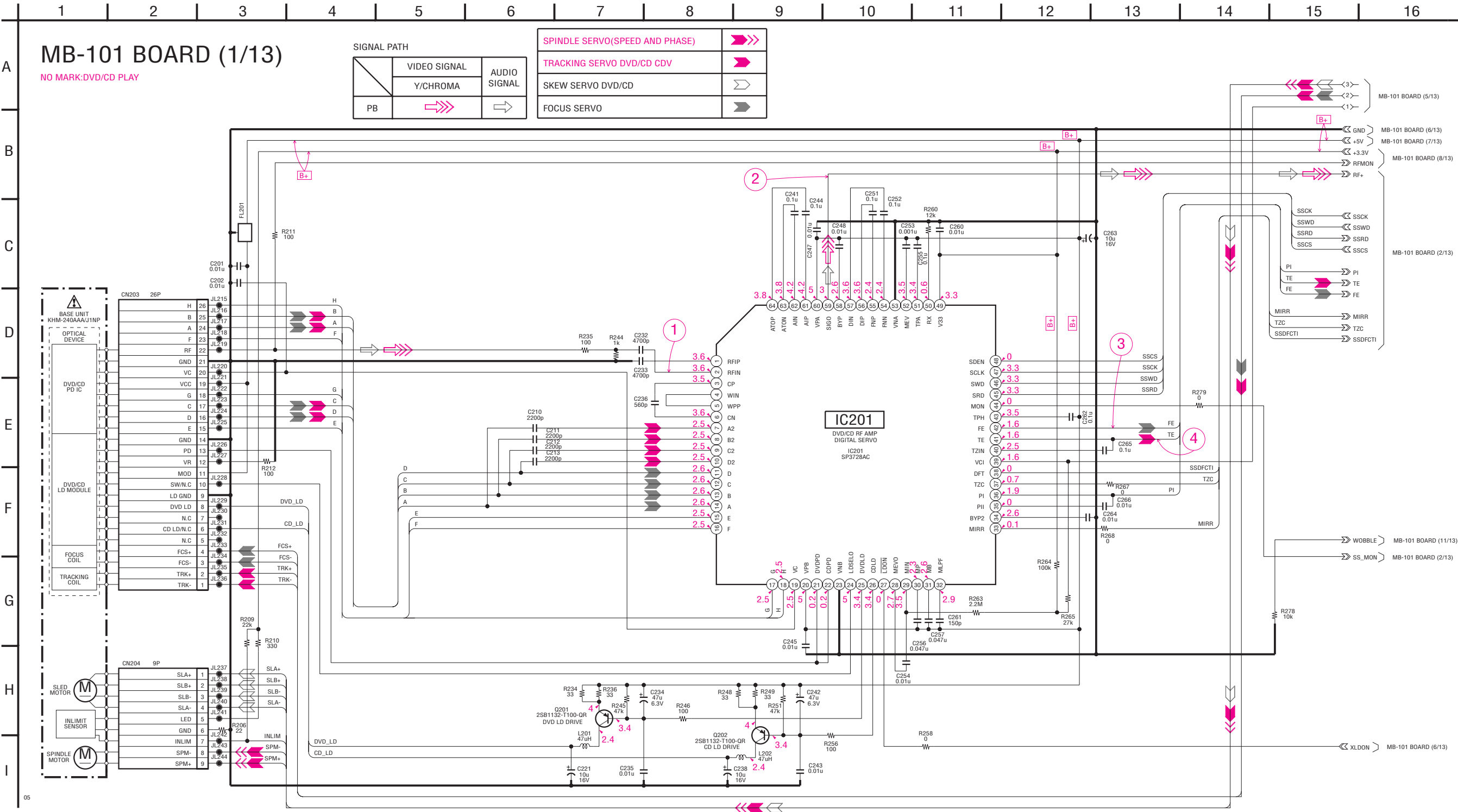


MB-101 (RF AMP, SERVO) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

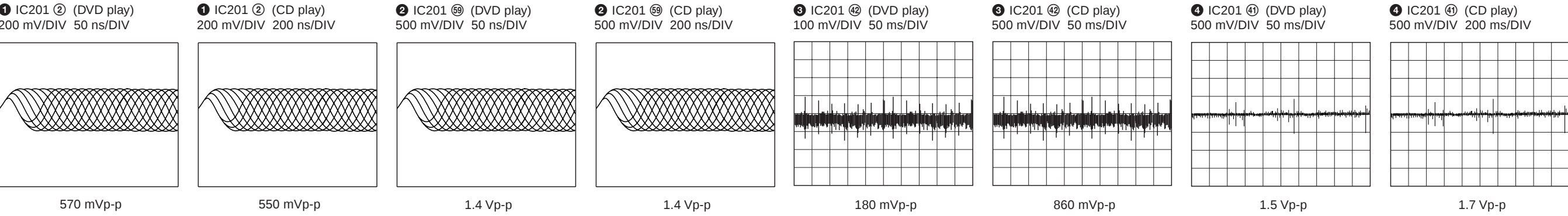
– Ref. No.: MB-101 board; 2,000 series –

The components identified by mark $\triangle$ or dotted line with mark $\triangle$ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque $\triangle$ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

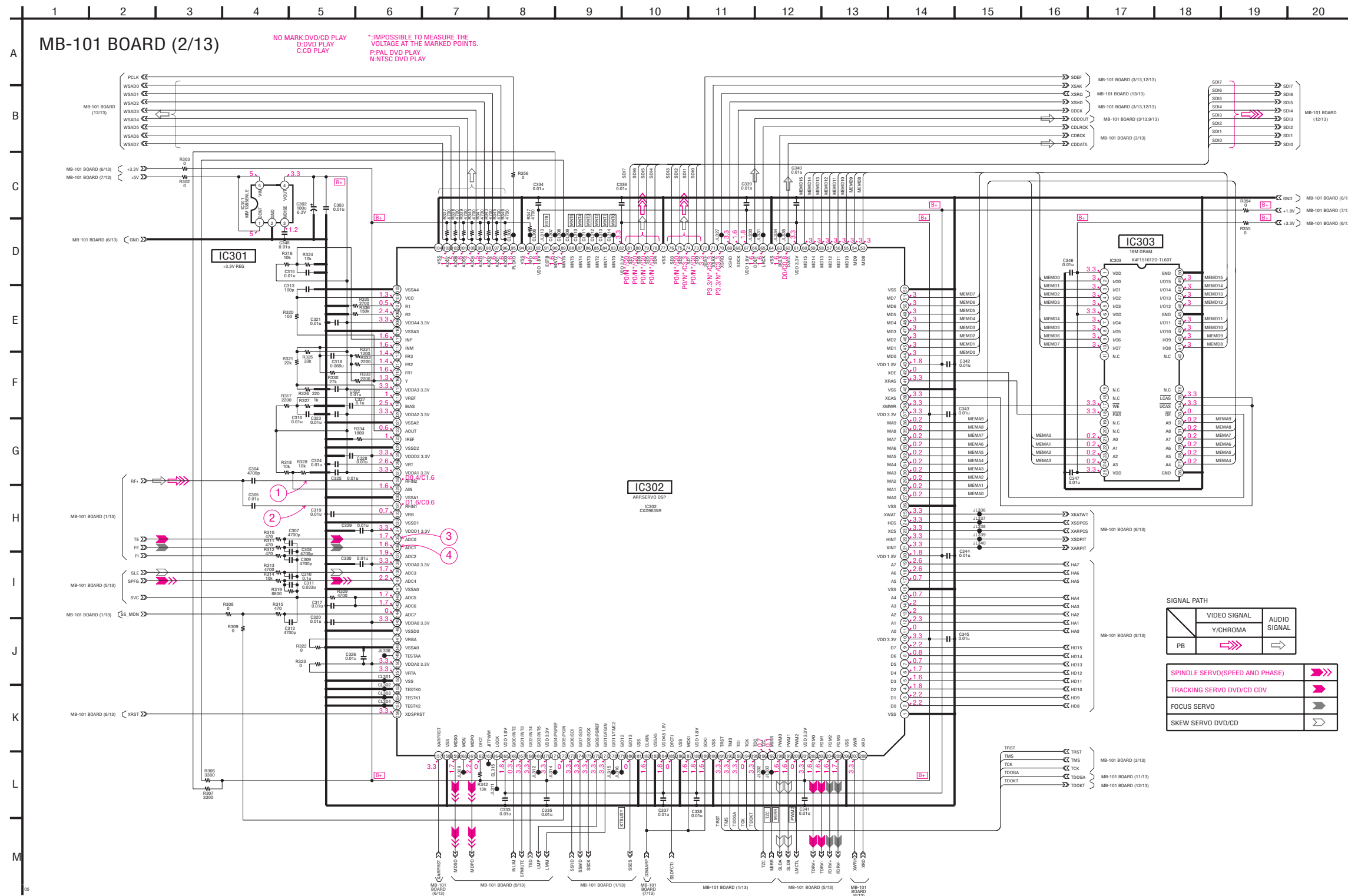
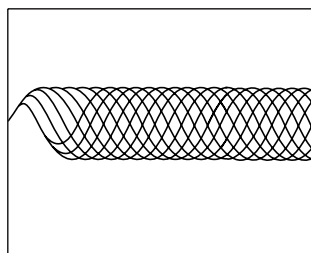


• Waveforms

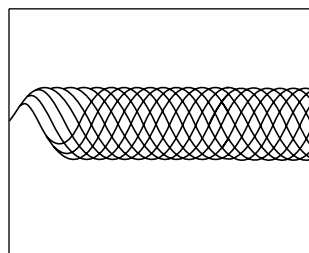


MB-101 (ARP, SERVO DSP) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

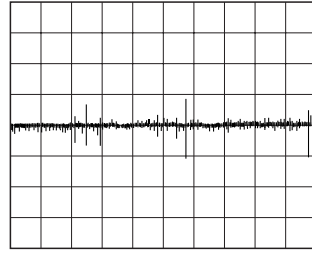
– Ref. No.: MB-101 board; 2,000 series –


• Waveforms
① IC302 ⑩ (CD play)
500 mV/DIV 200 ns/DIV


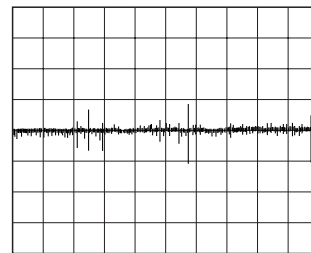
1.4 Vp-p

② IC302 ⑪ (DVD play)
500 mV/DIV 100 ns/DIV


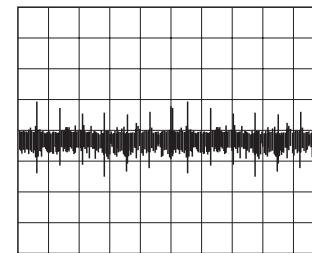
1.4 Vp-p

③ IC302 ⑫ (DVD play)
500 mV/DIV 50 ms/DIV


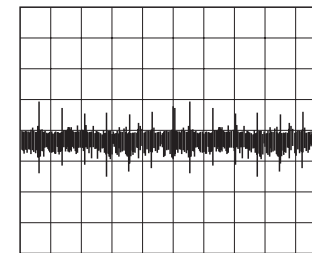
1.4 Vp-p

④ IC302 ⑬ (CD play)
500 mV/DIV 200 ms/DIV


1.7 Vp-p

⑤ IC302 ⑭ (DVD play)
100 mV/DIV 50 ms/DIV


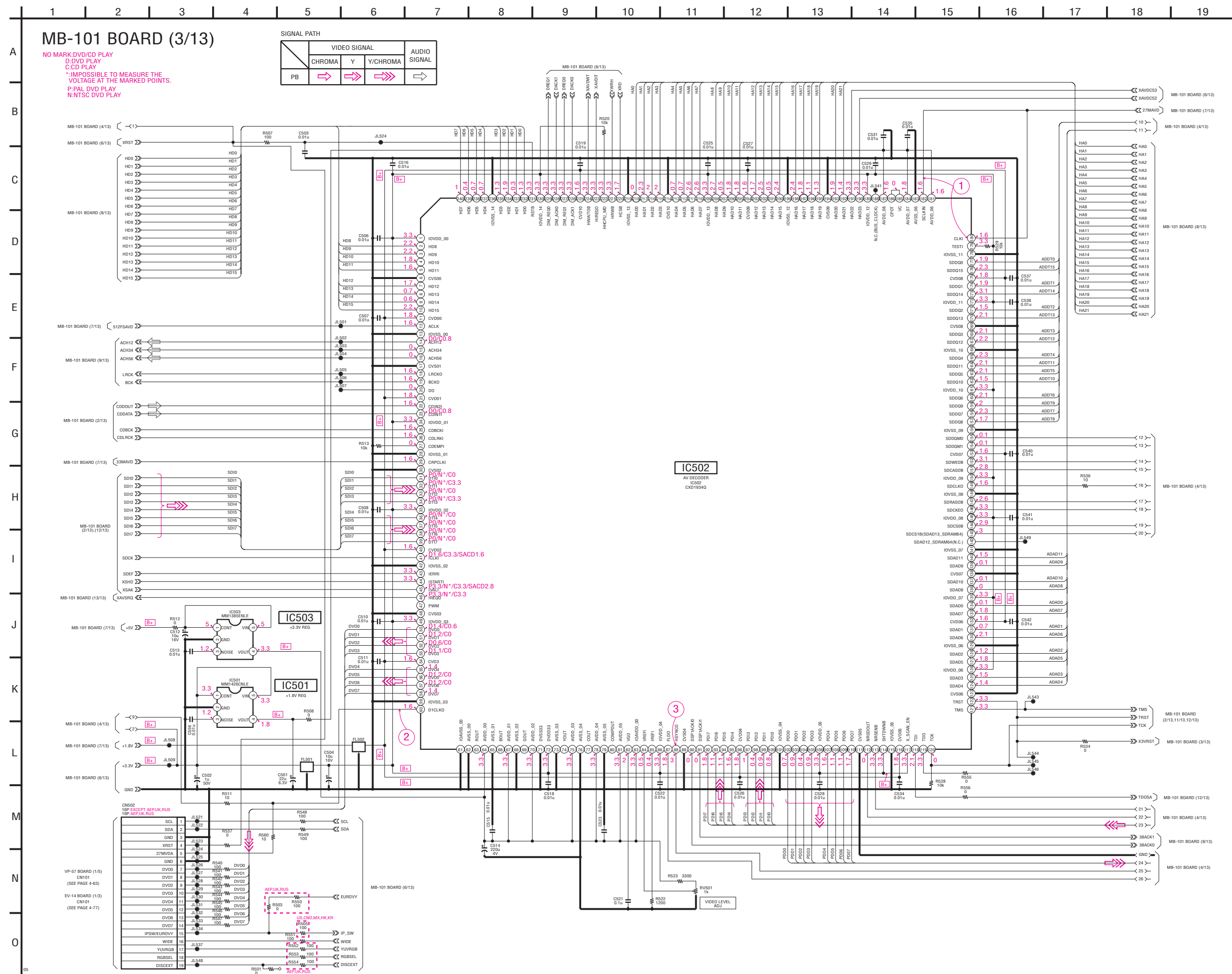
160 mVp-p

⑥ IC302 ⑮ (CD play)
500 mV/DIV 50 ms/DIV


860 mVp-p

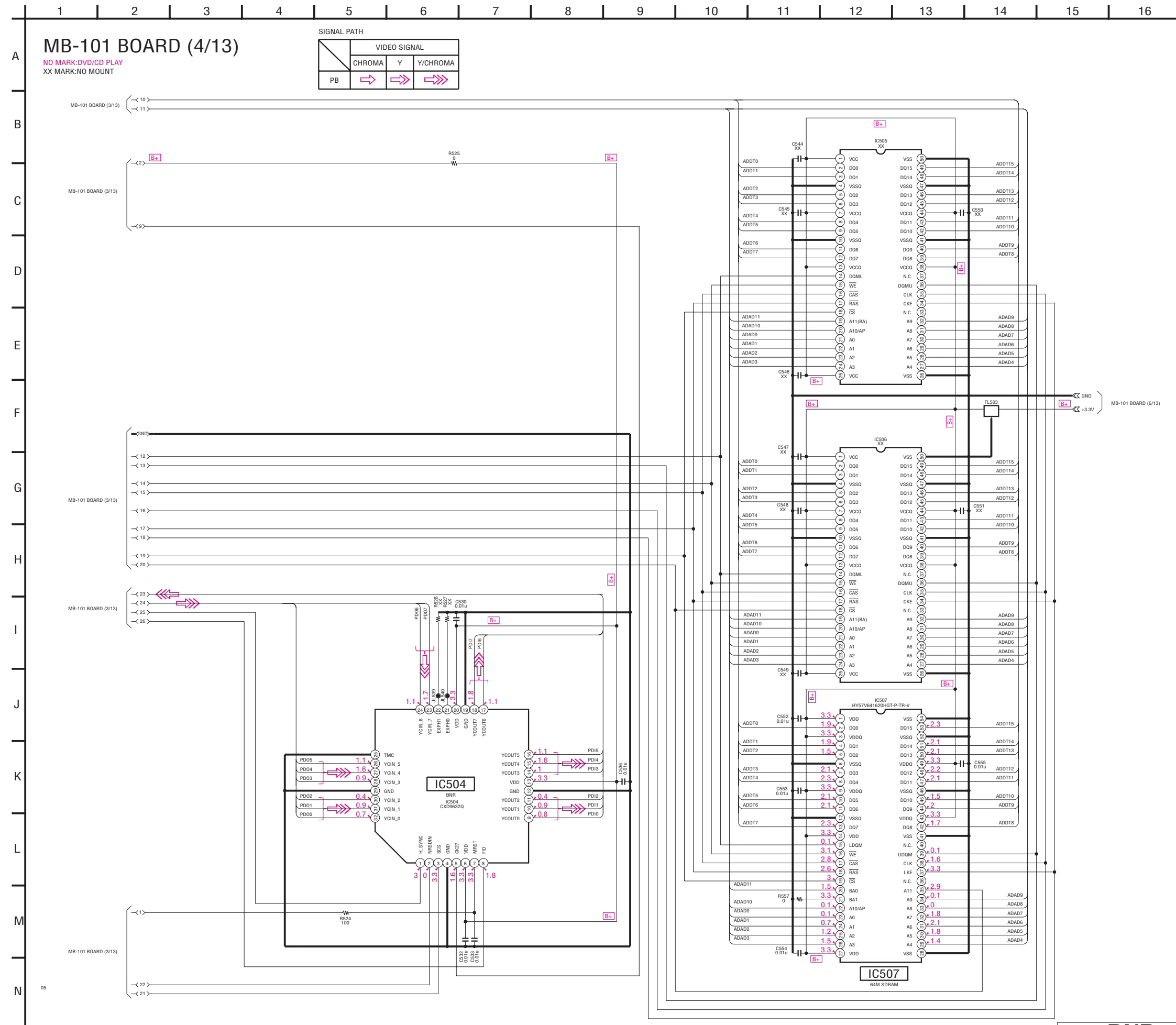
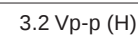
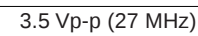
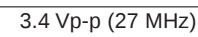
MB-101 (AV DECODER) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-101 board; 2,000 series –

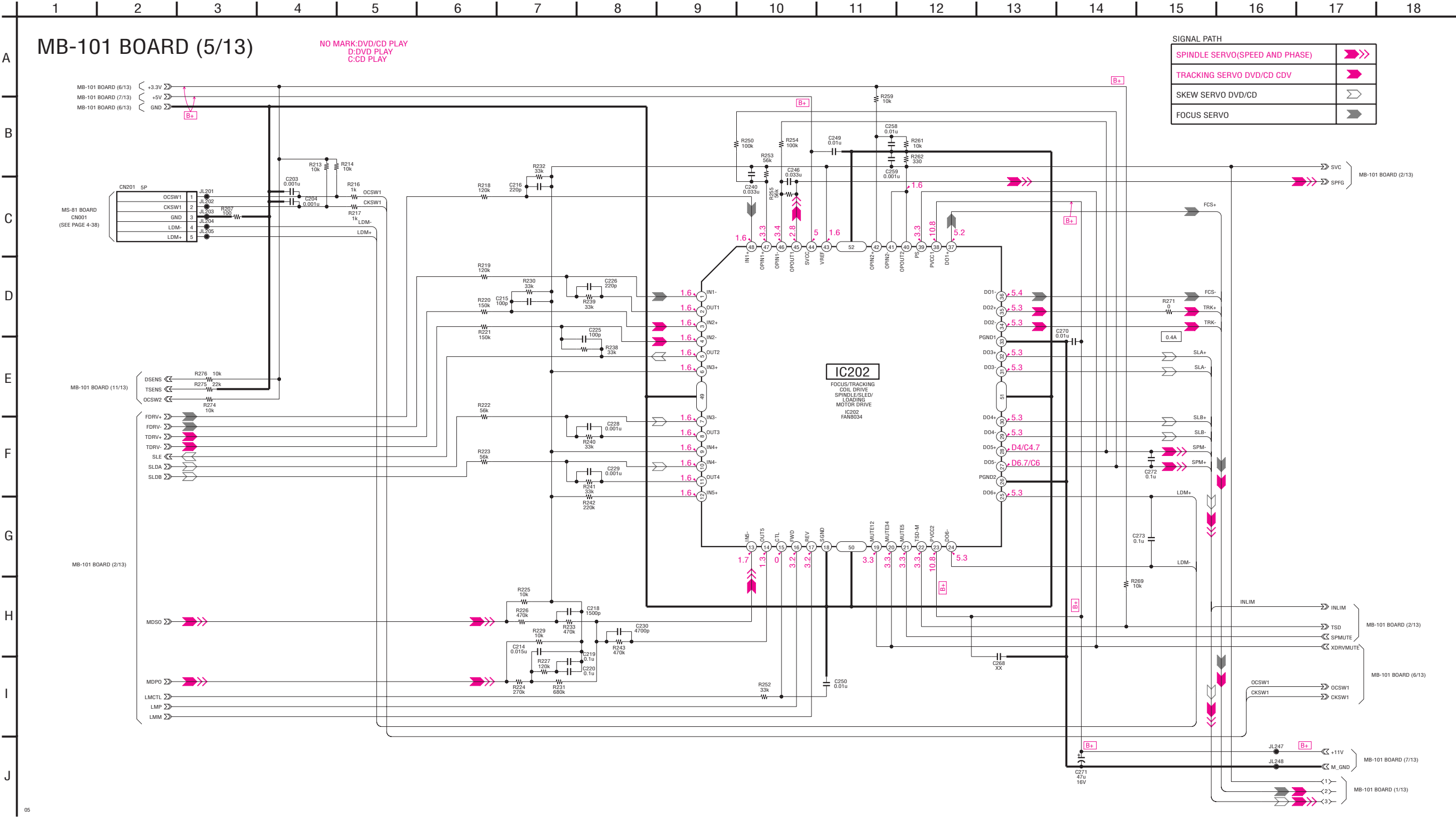


– Ref. No.: MB-101 board; 2,000 series –

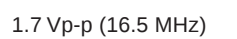
① IC502 ①80, ①82



MB-101 (DRIVE) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.
– Ref. No.: MB-101 board; 2,000 series –

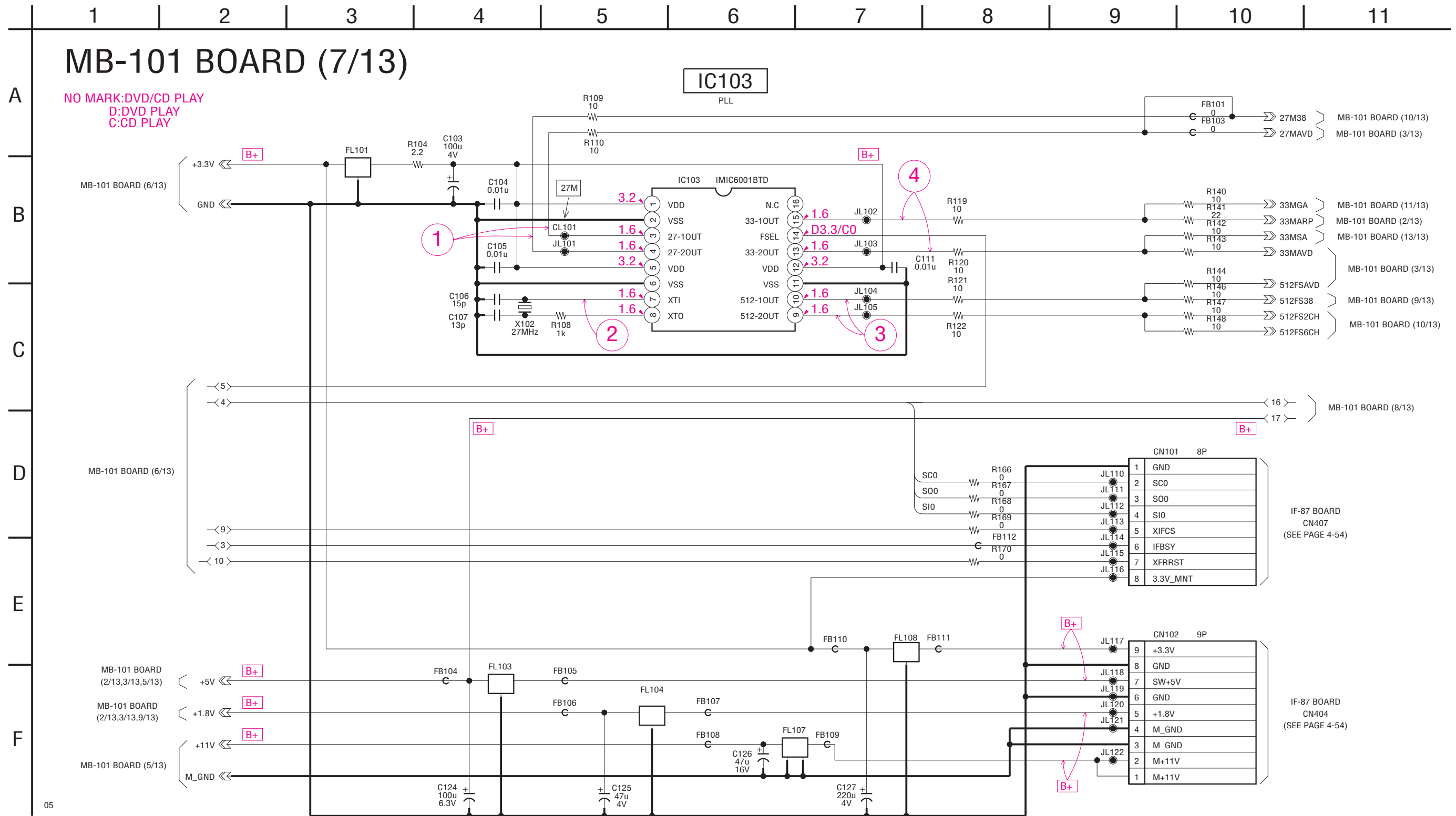


– Ref. No.: MB-101 board; 2,000 series –



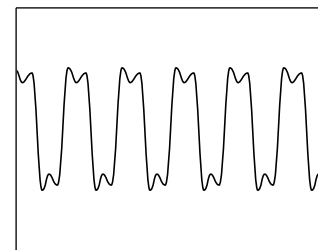
MB-101 (CLOCK GENERATOR) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-101 board; 2,000 series –



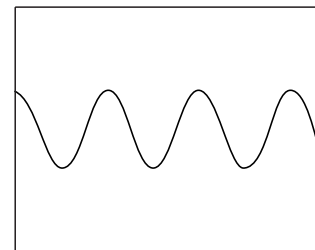
- **Waveforms**

① IC103 ③, ④



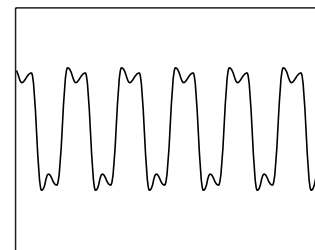
3.5 Vp-p (27 MHz)

② IC103 ⑦



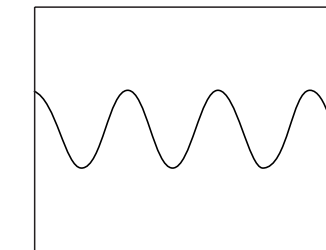
1.5 Vp-p (27 MHz)

③ IC103 ⑨, ⑩



DVD : 3.3 Vp-p (24.57 MHz)
CD : 3.3 Vp-p (22.58 MHz)

④ IC103 ⑬, ⑮

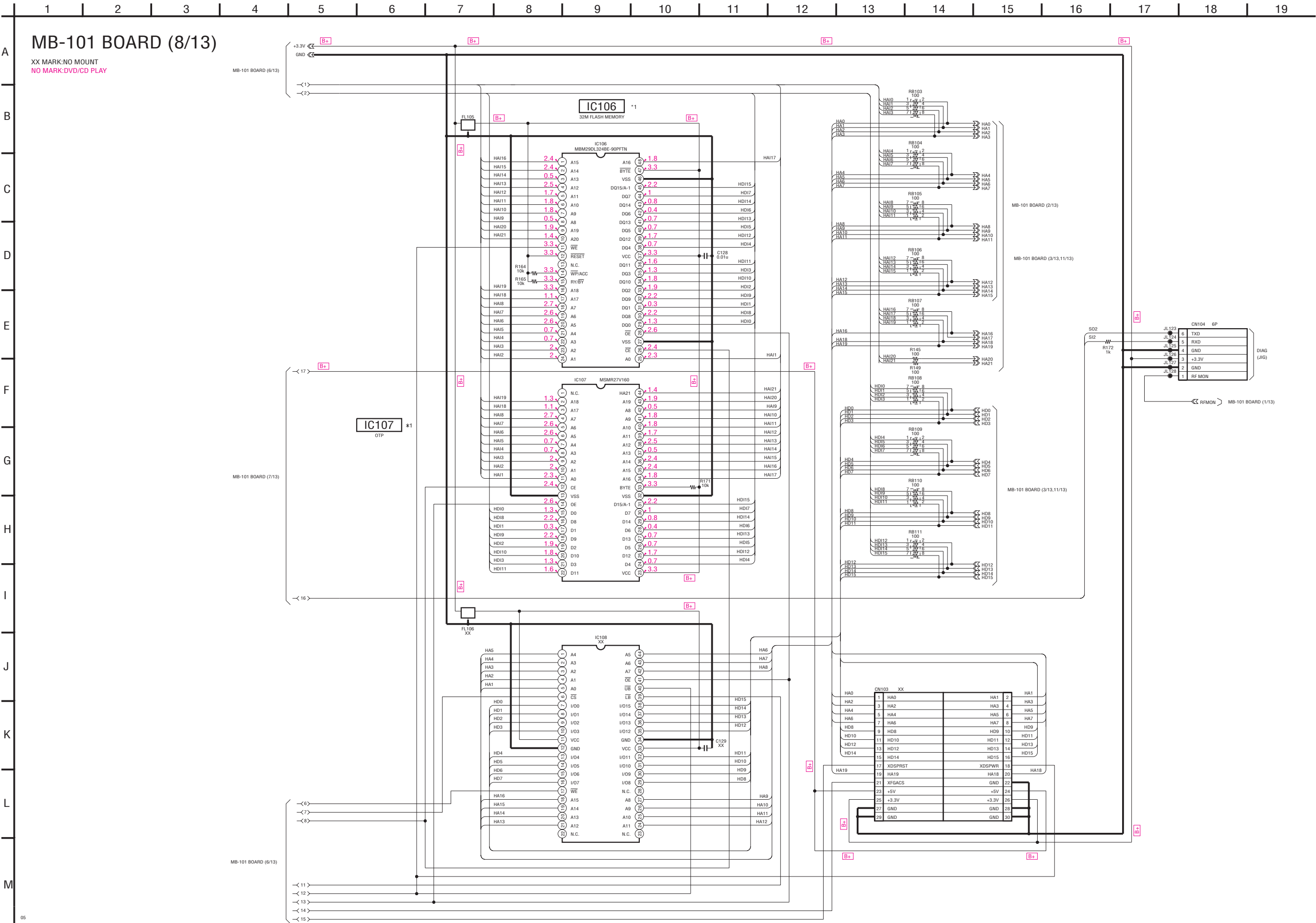


3.2 Vp-p (33.87 MHz)

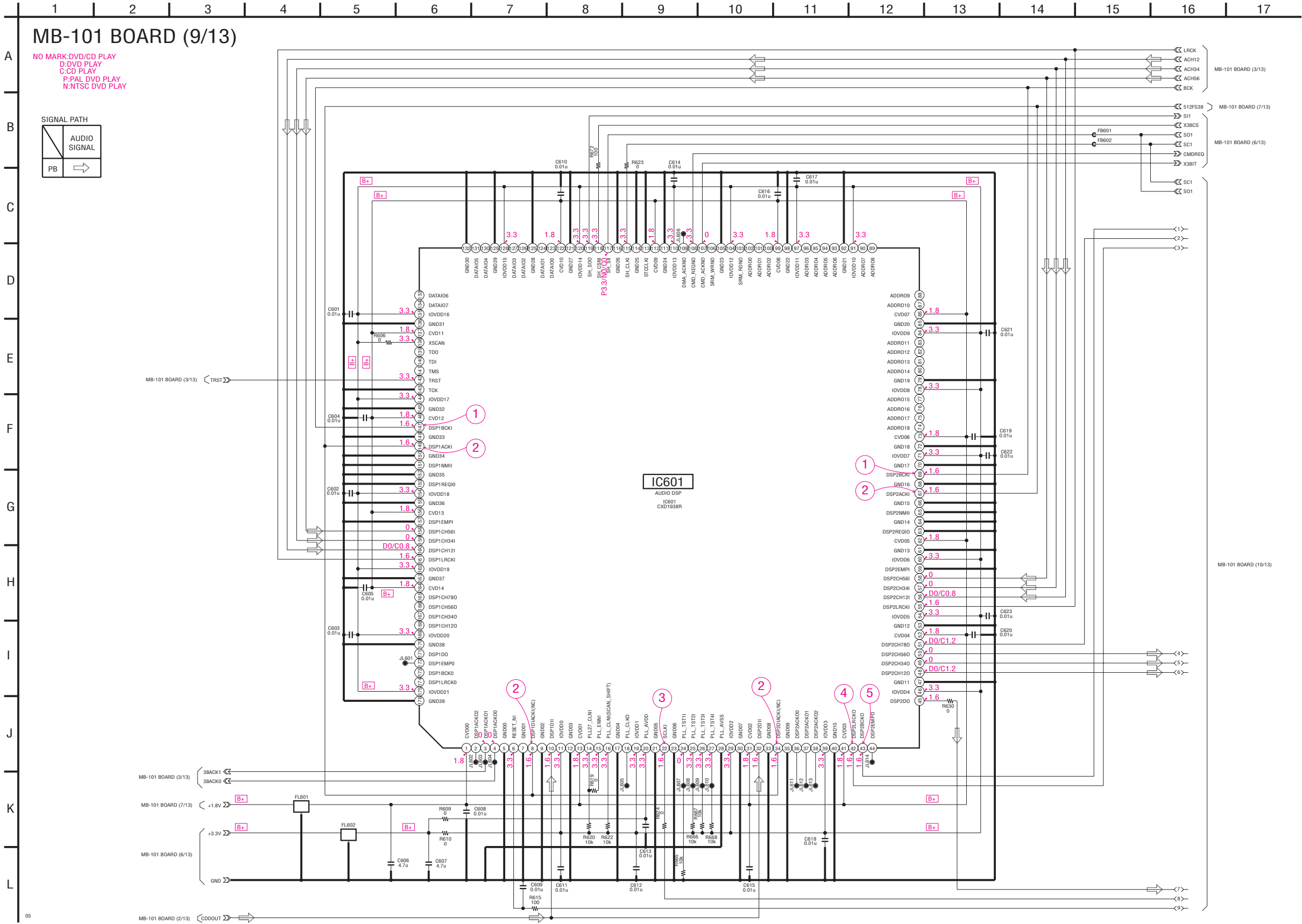
MB-101 (FLASH MEMORY, OTP) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-101 board; 2,000 series –

*1: Either IC106 or IC107 is used.

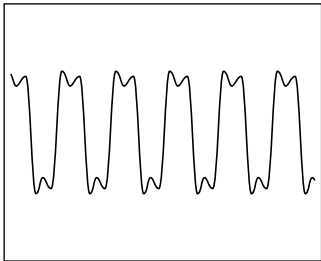


MB-101 (AUDIO DSP) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.
– Ref. No.: MB-101 board; 2,000 series –



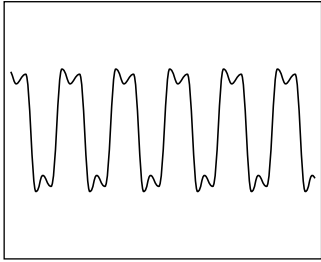
• Waveforms

1 IC601 ⑥9, ①⑦



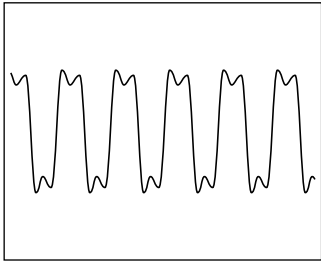
4.1 Vp-p (3.1 MHz)

2 IC601 ⑧, ③4, ⑥7, ①⑧



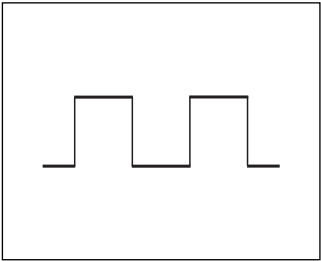
DVD: 3.3 Vp-p (24.57 MHz)
CD: 3.3 Vp-p (22.58 MHz)

3 IC601 ②②



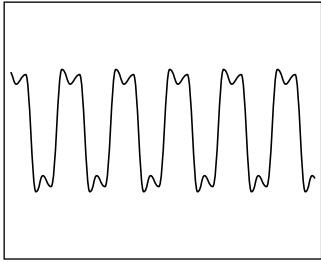
3.5 Vp-p (27 MHz)

4 IC601 ④②



4.3 Vp-p (48.1 kHz)

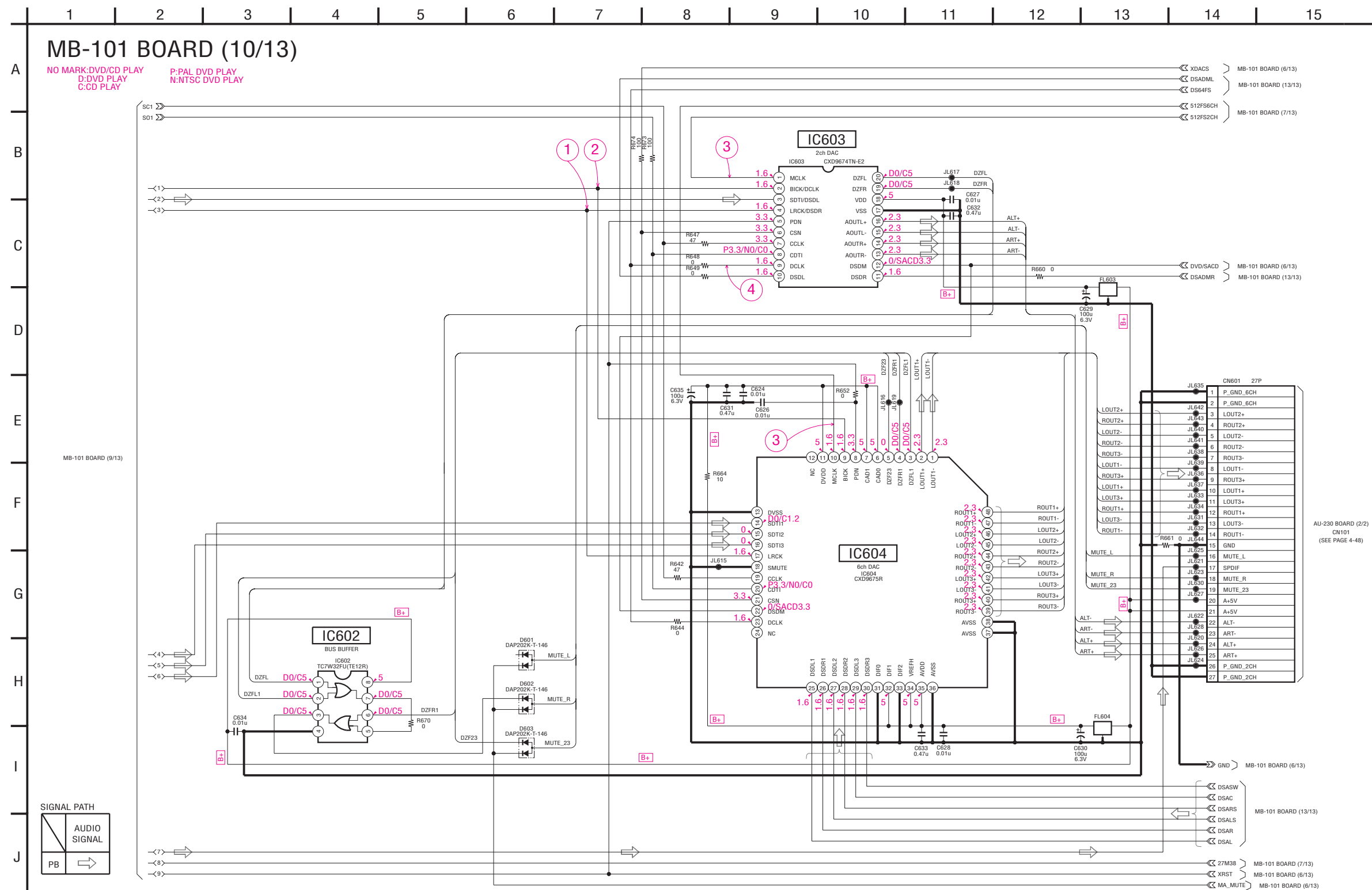
5 IC601 ④③



4.4 Vp-p (3.1 MHz)

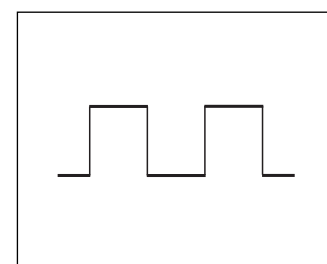
MB-101 (2ch/6ch DAC) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-101 board; 2,000 series –



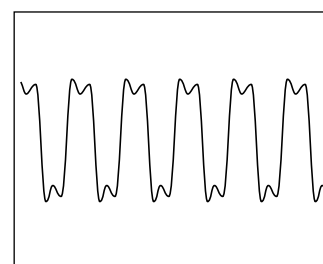
- Waveforms

① IC603 ④, IC604 ⑰



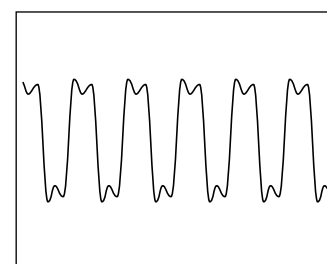
4.3 Vp-p (48.1 kHz)

② IC603 ②, IC604 ⑨



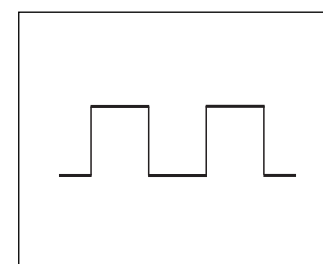
4.4 Vp-p (3.1 MHz)

③ IC603 ①, IC604 ⑩



DVD: 3.3 Vp-p (24.57 MHz)
CD: 3.3 Vp-p (22.58 MHz)

④ IC603 ⑨



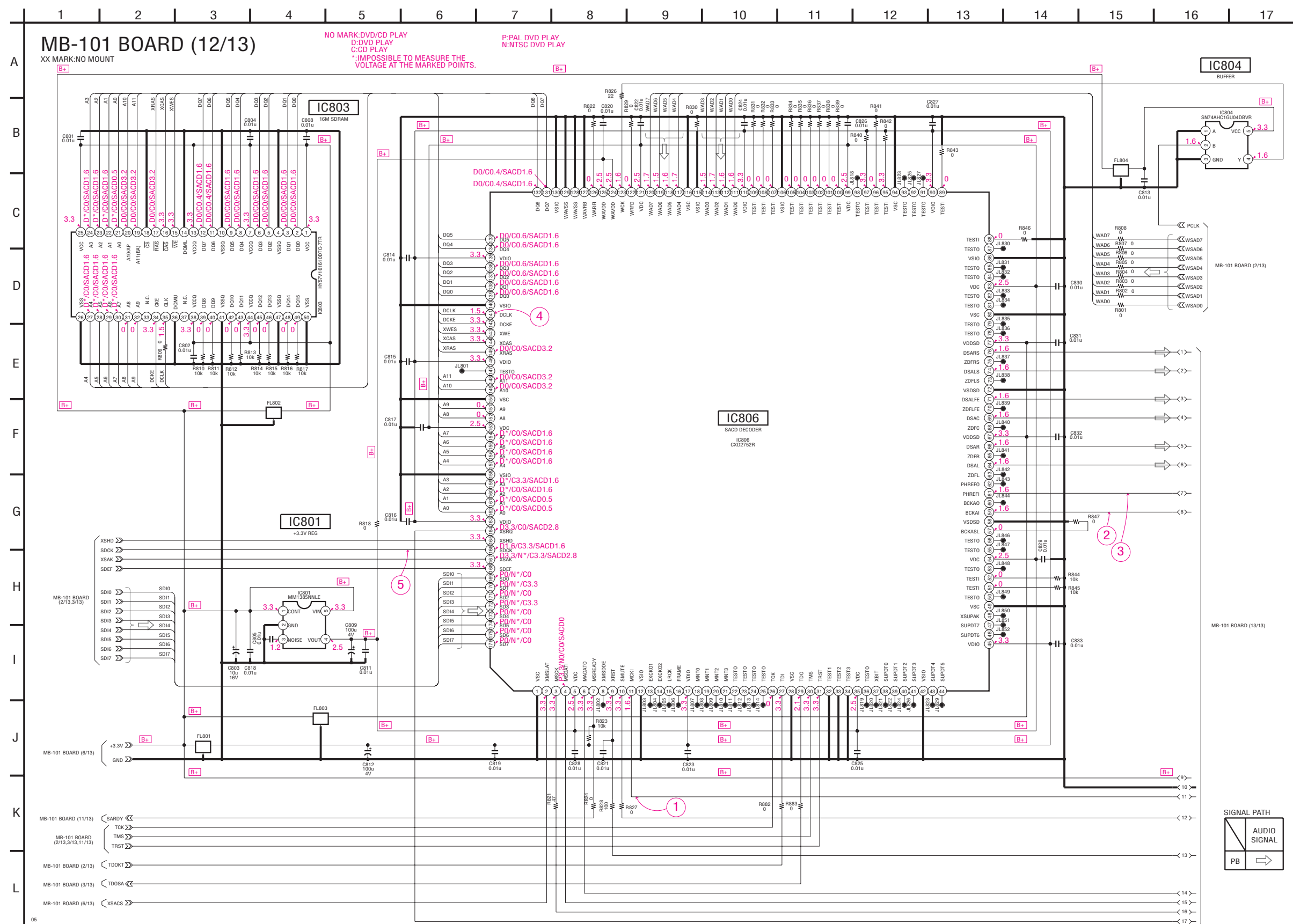
4 Vp-p (2.84 MHz)

– Ref. No.: MB-101 board; 2,000 series –



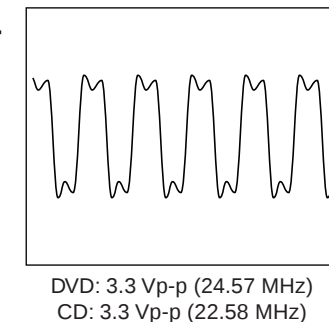
MB-101 (SACD DECODER) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-101 board; 2,000 series –

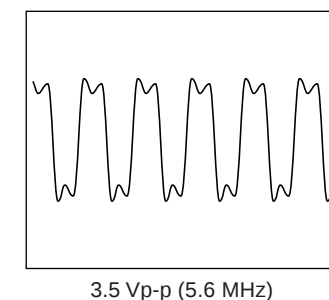


- Waveforms

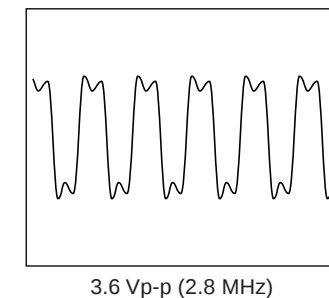
① IC806 ⑪



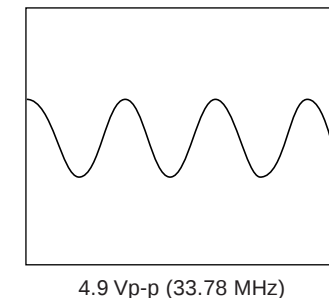
② IC806 ⑤9



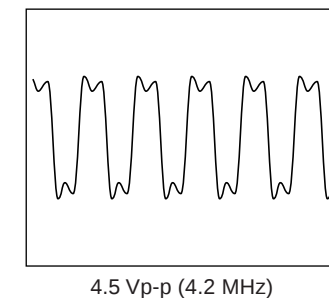
③ IC806 ⑥1



④ IC806 ①④①



⑤ IC806 ①66

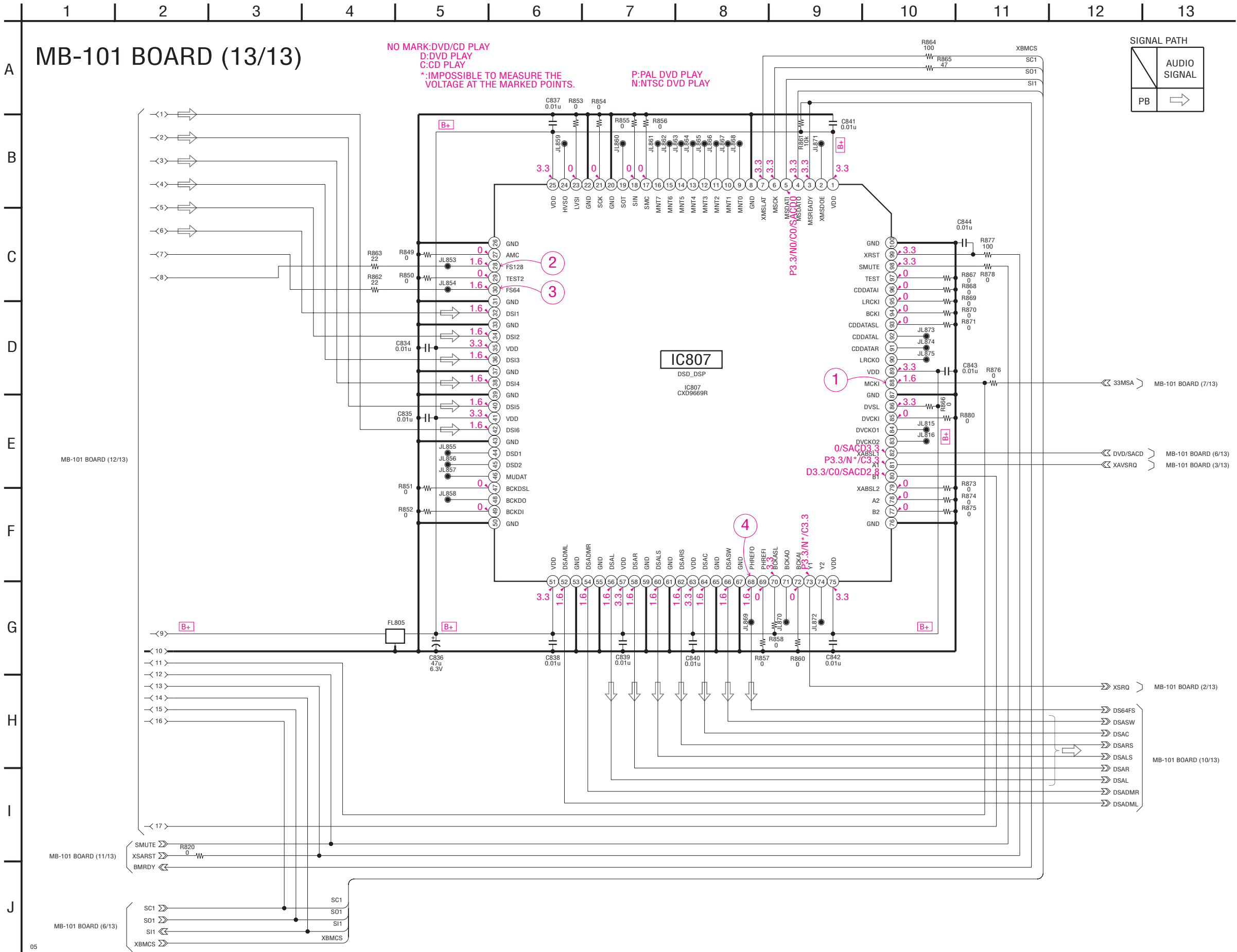


SIGNAL PATH	
	AUDIO SIGNAL
PB	

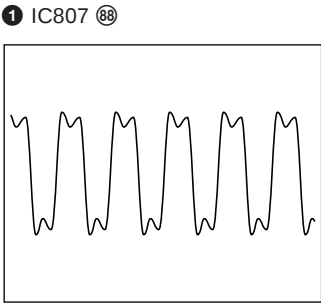
DVP-NS900V

MB-101 (DSD DSP) SCHEMATIC DIAGRAM • See page 4-7 for printed wiring board.

– Ref. No.: MB-101 board; 2,000 series –



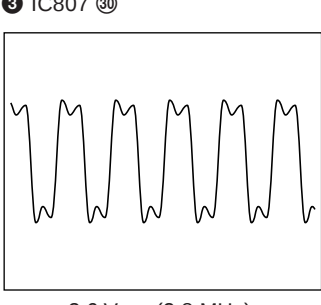
• Waveforms



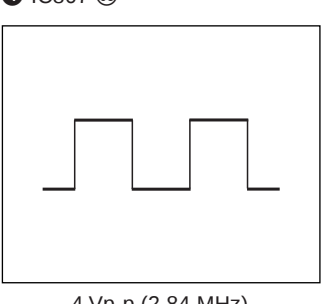
DVD: 3.3 Vp-p (24.57 MHz)
CD: 3.3 Vp-p (22.58 MHz)



3.5 Vp-p (5.6 MHz)



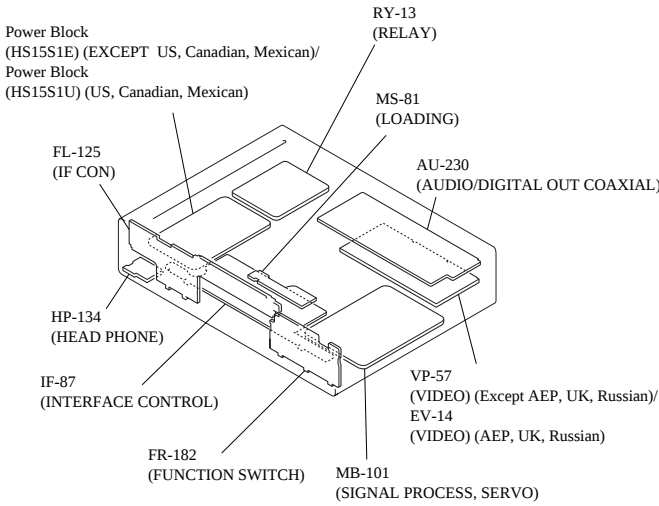
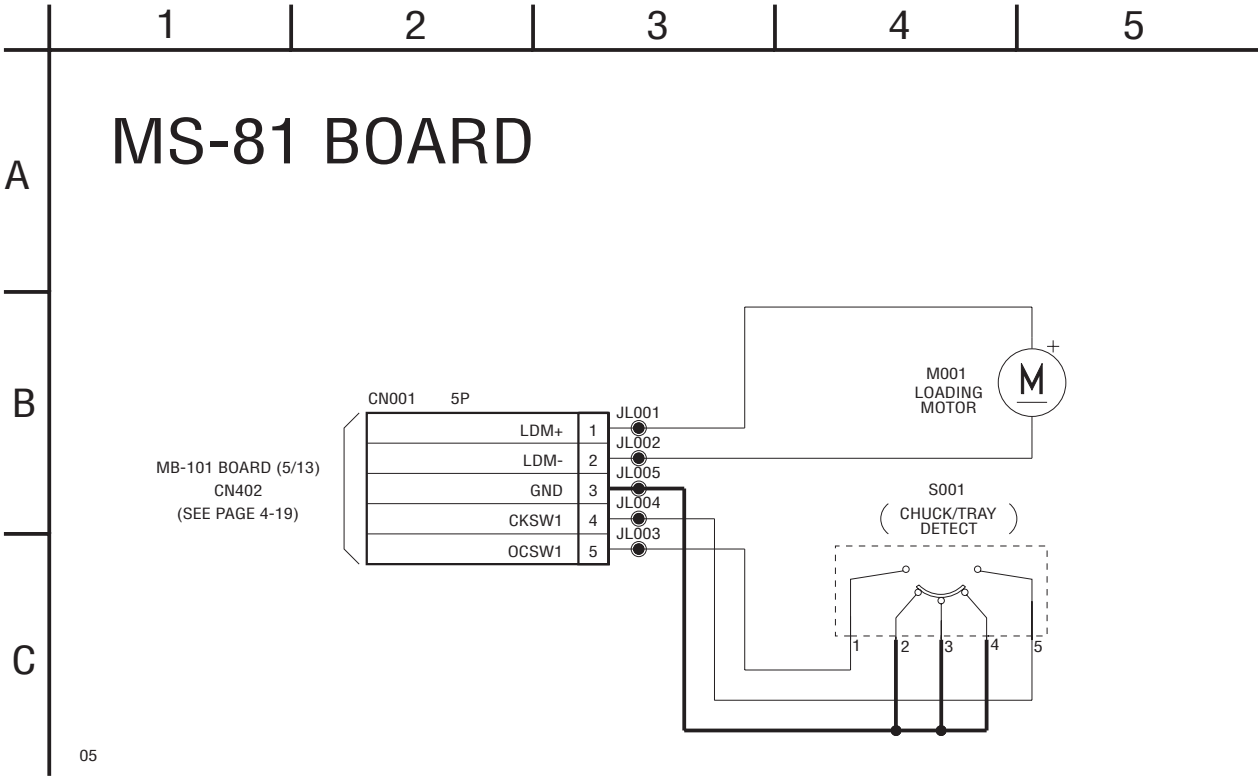
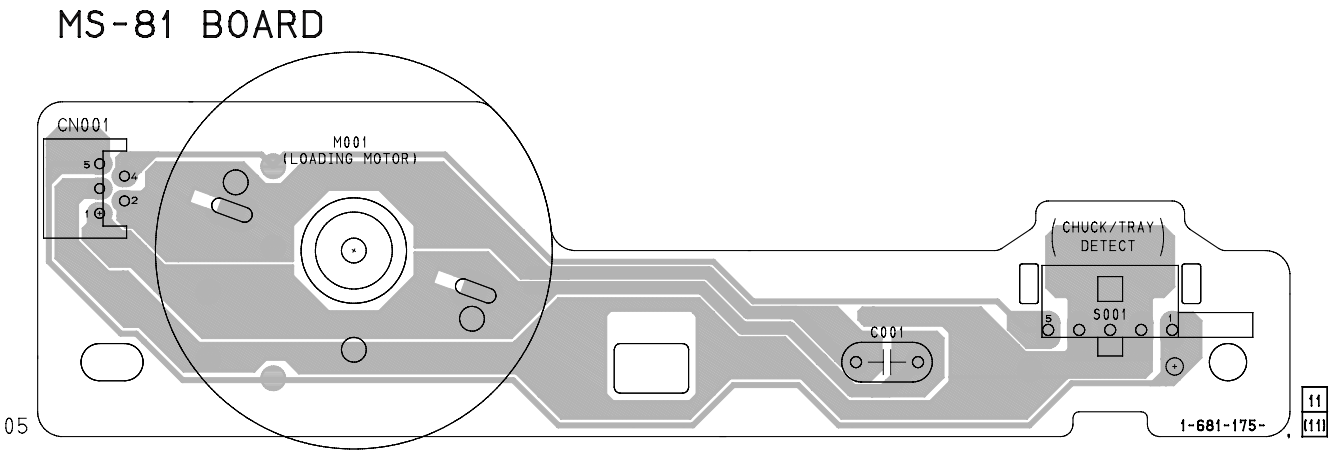
3.6 Vp-p (2.8 MHz)



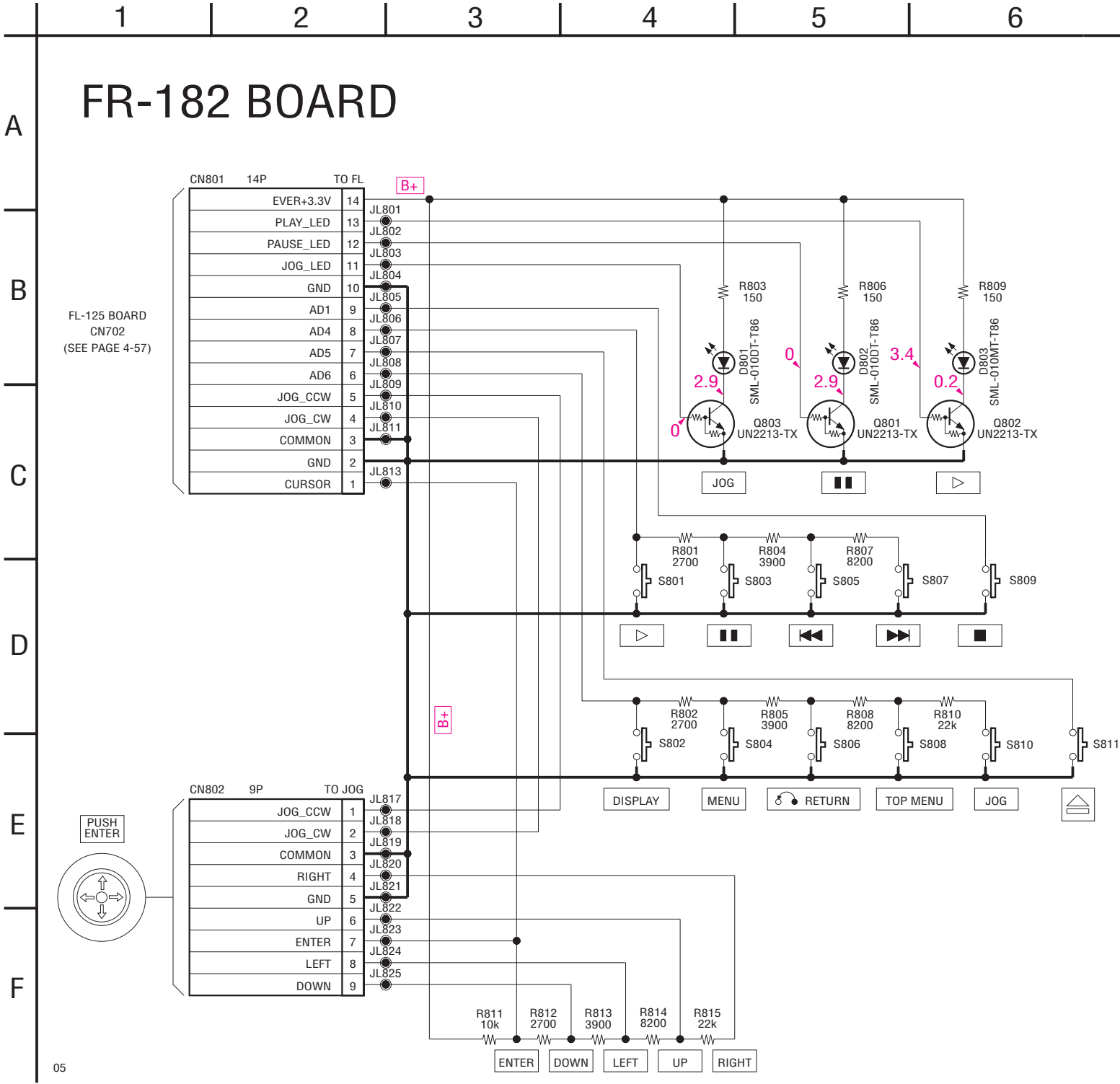
4 Vp-p (2.84 MHz)

MS-81 (LOADING) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
– Ref. No.: MS-81 board; 1,000 series –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

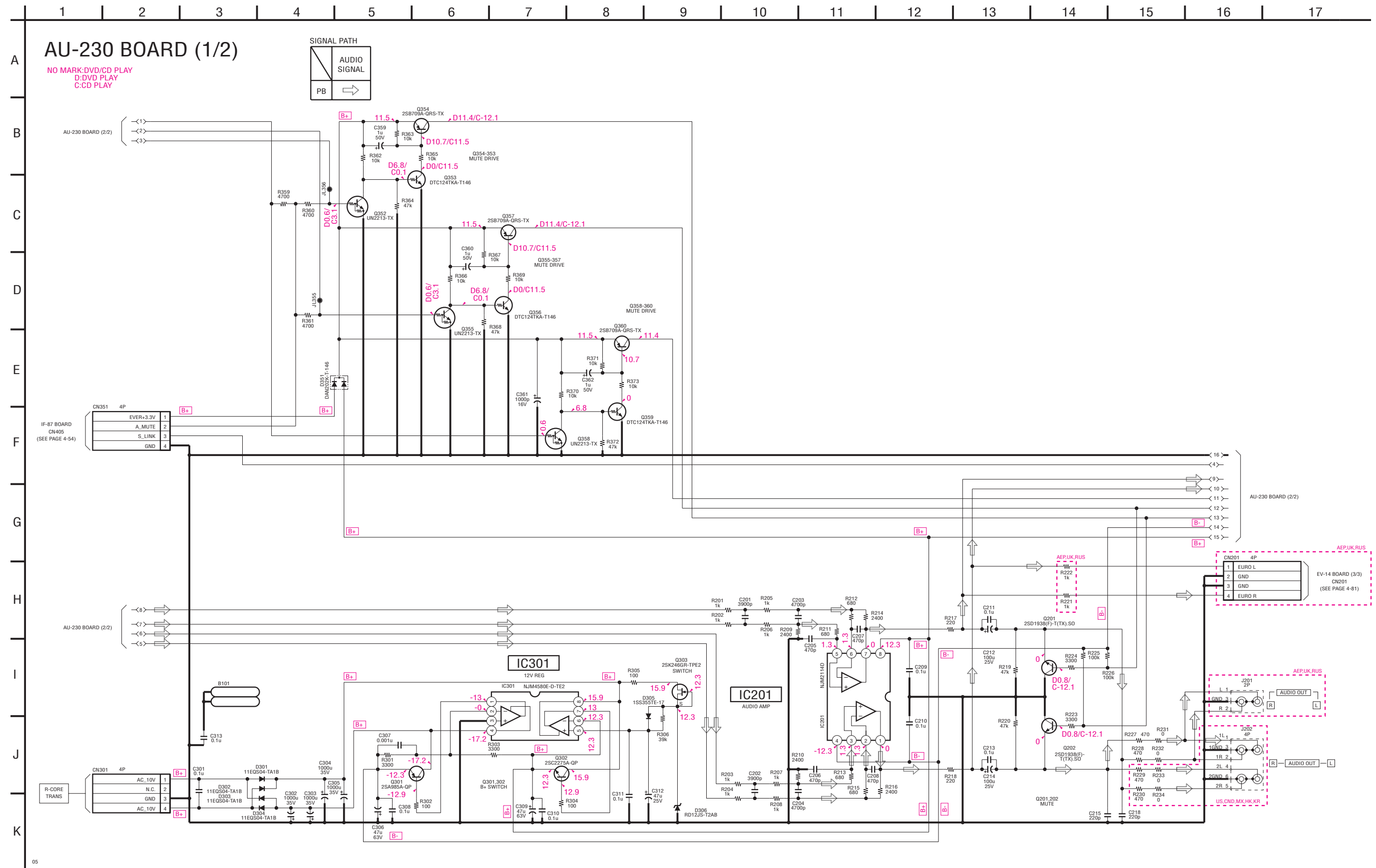


FR-182 (FUNCTION SWITCH) SCHEMATIC DIAGRAM
– Ref. No.: FR-182 board; 1,000 series –



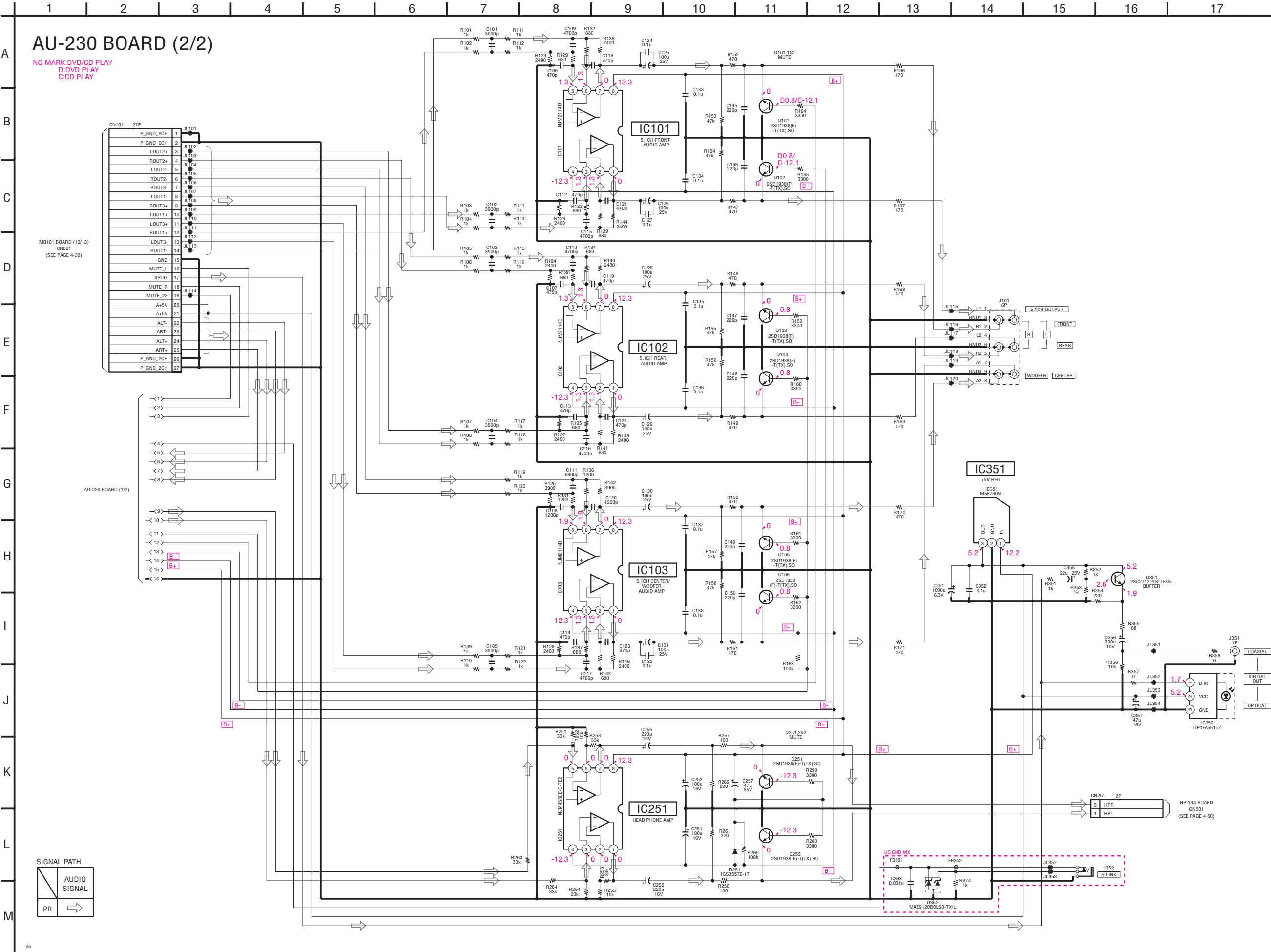
AU-230 (AUDIO) SCHEMATIC DIAGRAM

– Ref. No.: AU-230 board; 1,000 series –



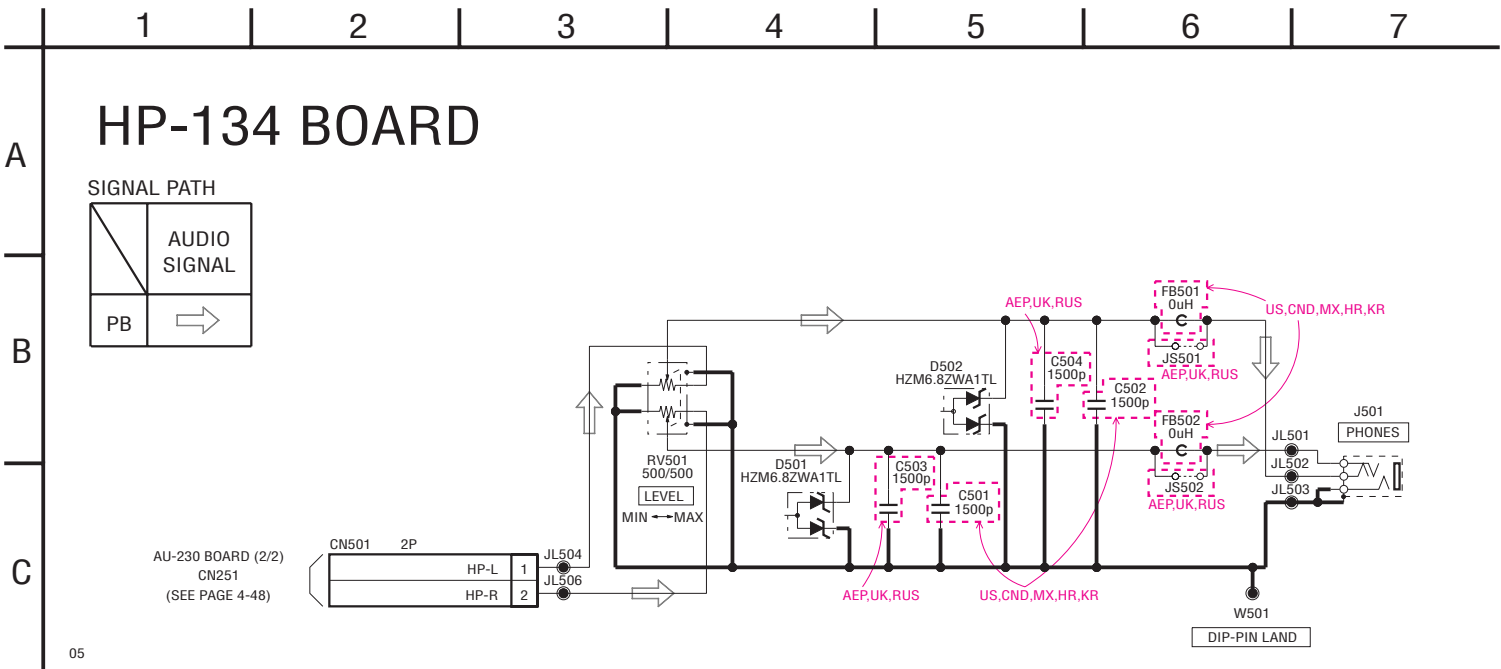
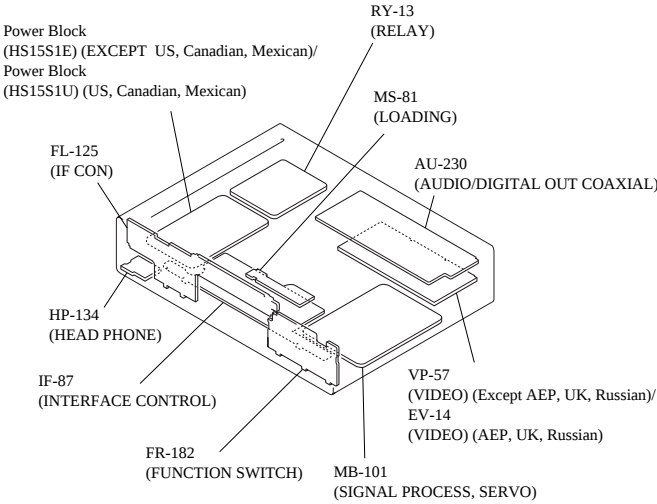
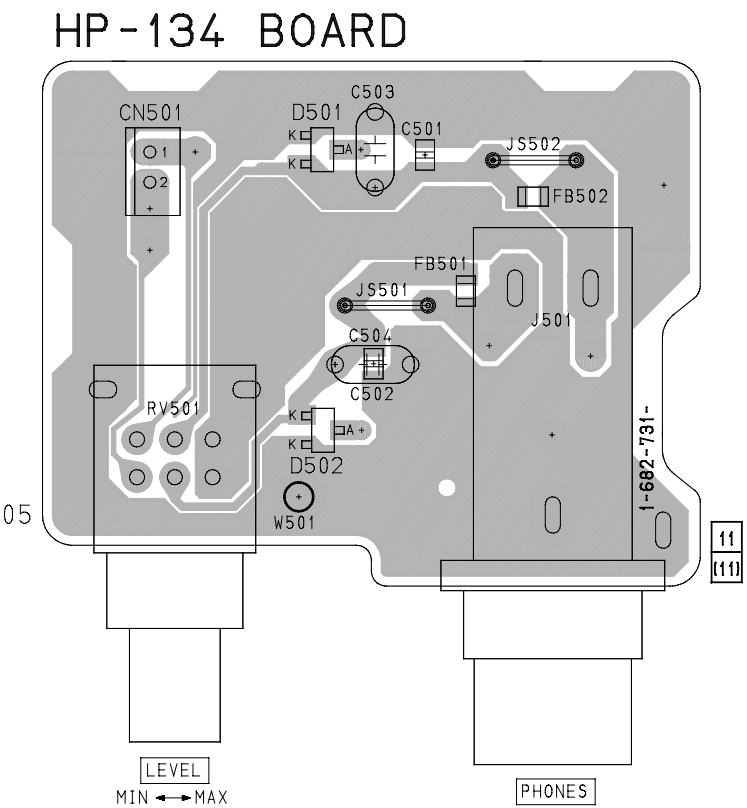
AU-230 (DIGITAL OUT COAXIAL) SCHEMATIC DIAGRAM

– Ref. No.: AU-230 board; 1,000 series –



HP-134 (HEADPHONE) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
– Ref. No.: HP-134 board; 1,000 series –

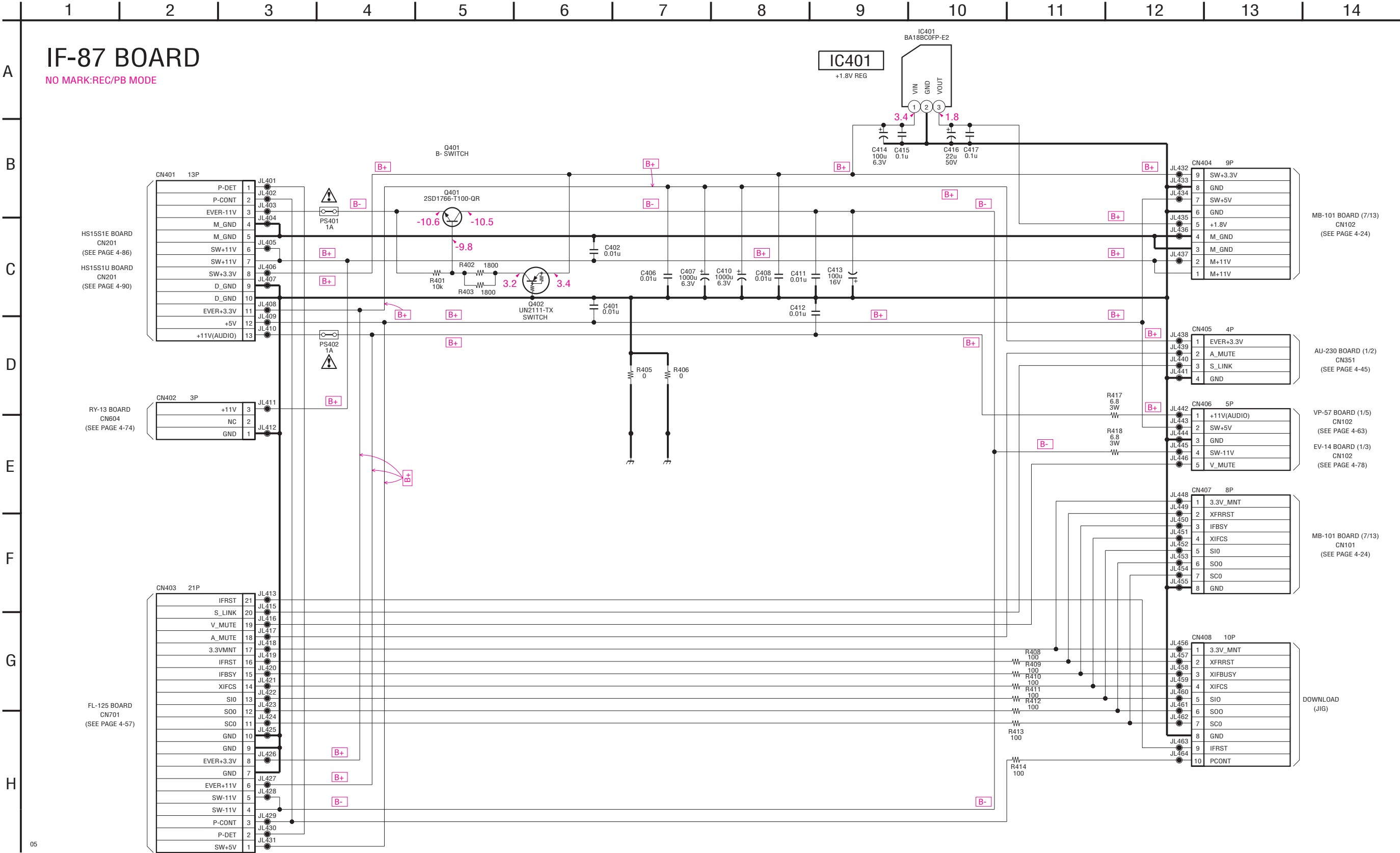
There are a few cases that the part isn't mounted in this model is printed on this diagram.



IF-87 (INTERFACE CONTROL) SCHEMATIC DIAGRAM
– Ref. No.: IF-87 board; 1,000 series –

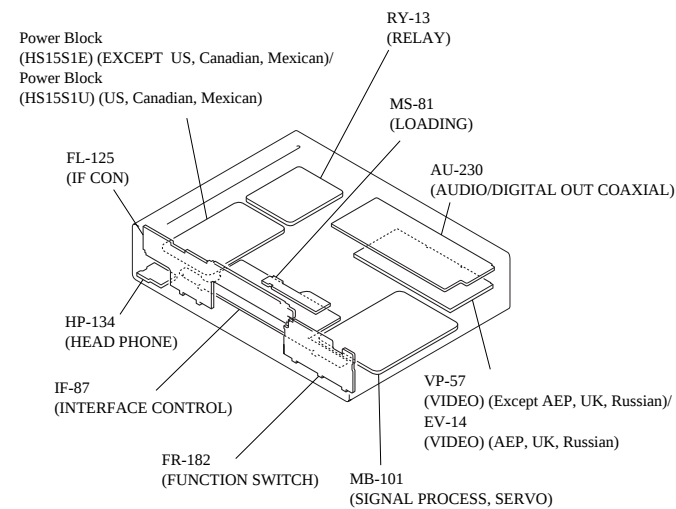
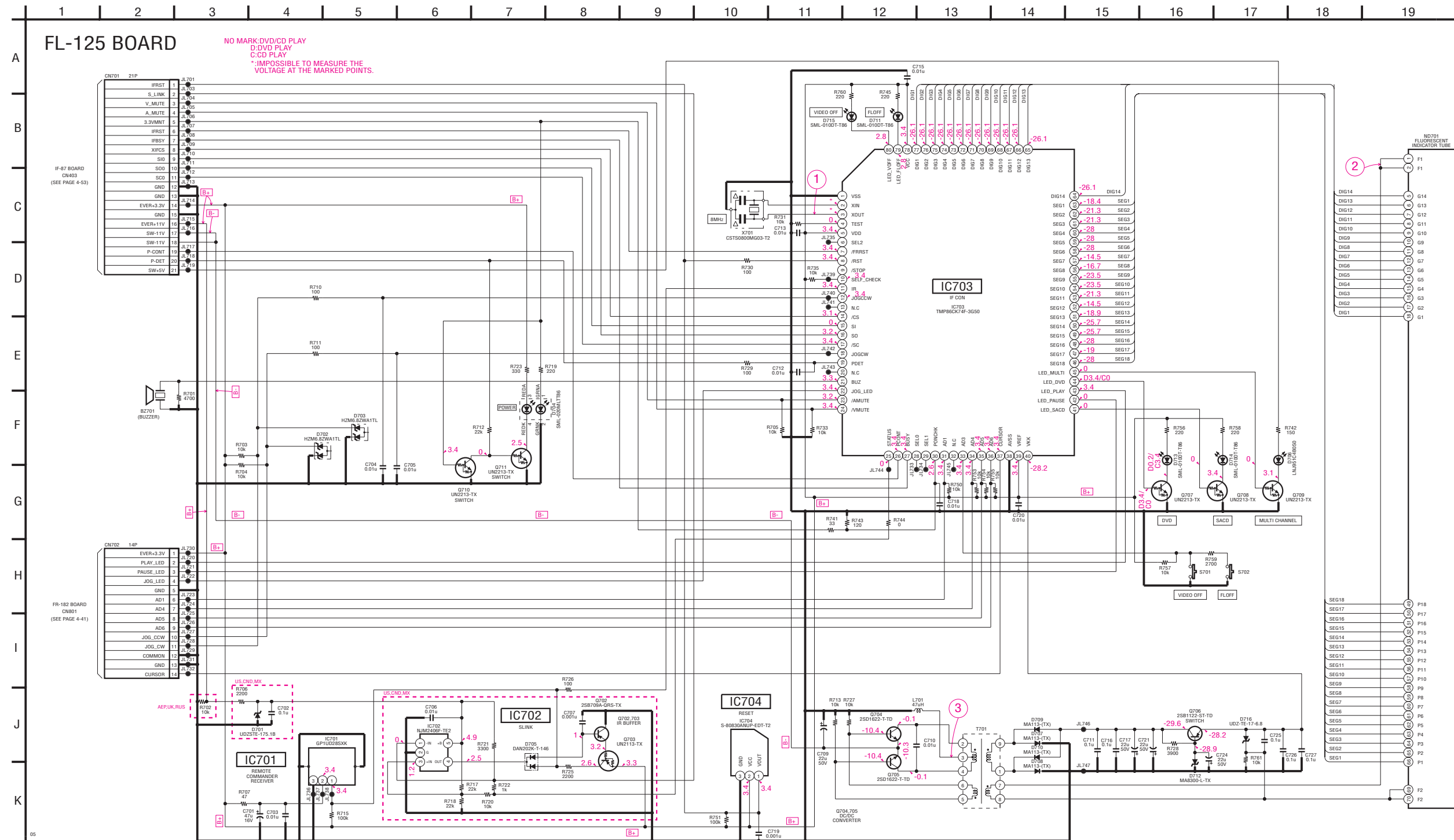
The components identified by mark $\triangle$ or dotted line with mark $\triangle$ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque $\triangle$ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



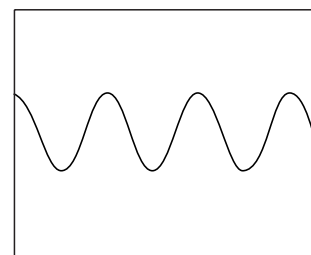
FL-125 (IF CON) SCHEMATIC DIAGRAM

– Ref. No.: FL-125 board; 1,000 series –

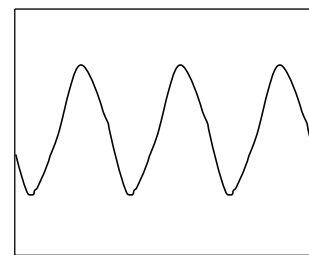


Waveforms

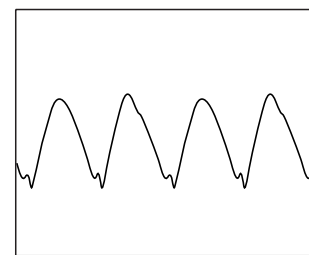
① IC703 ③



② ND701 ①, ②



③ T701 ③



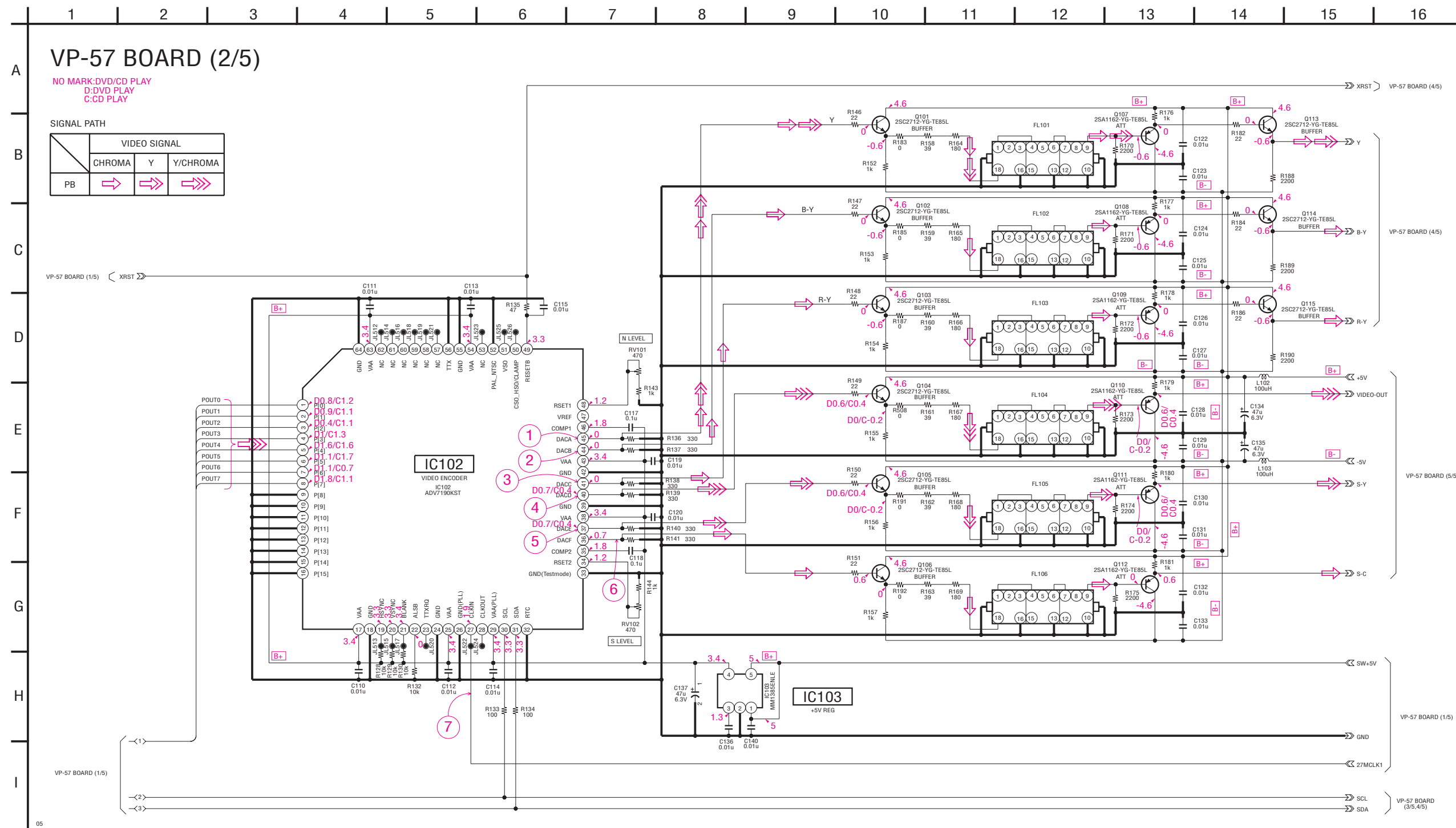
– Ref. No.: VP-57 board; 3,000 series –
– **US, CND, MX, HK, KR** –



VP-57 (VIDEO ENCODER) SCHEMATIC DIAGRAM • See page 4-59 for printed wiring board.

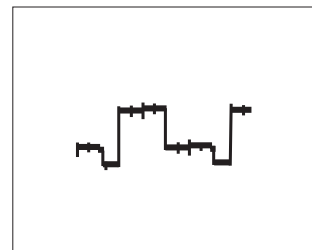
– Ref. No.: VP-57 board; 3,000 series –

– US, CND, MX, HK, KR –



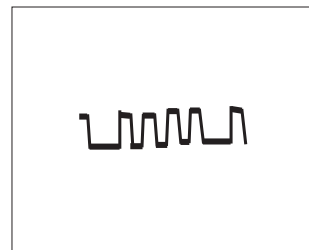
- **Waveforms**

1 IC102 (45)



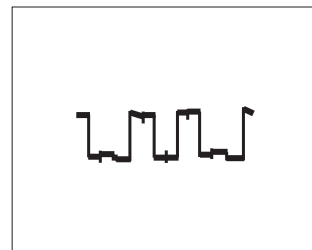
830 mVp-p (H)

② IC102 ④④



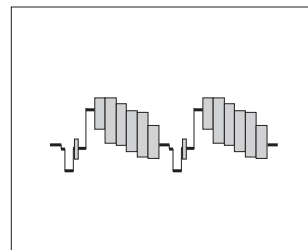
810 mVp-p (H)

③ IC102 ④



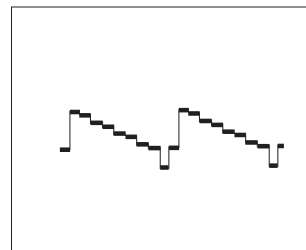
810 mVp-p (H)

④ IC102 ④④



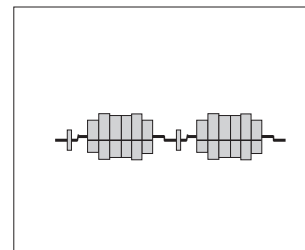
1.2 Vp-p (H)

5 IC102 37



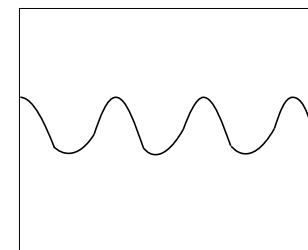
990 mVp-p (H)

6 IC102 36



860 mVp-p (H)

7 IC102 (27)



3.5 Vp-p (27 MHz)

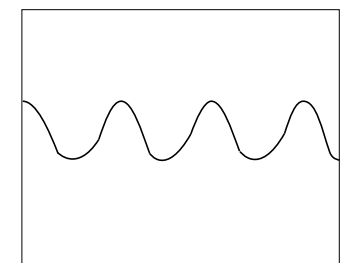
VP-57 (I/P CONVERTER) SCHEMATIC DIAGRAM • See page 4-59 for printed wiring board.

– Ref. No.: VP-57 board; 3,000 series –

– US, CND, MX, HK, KR –

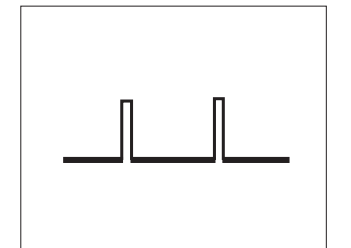
- **Waveform**

① IC201 ①47



1.6 Vp-p (66 MHz)

② IC201 ③⑥

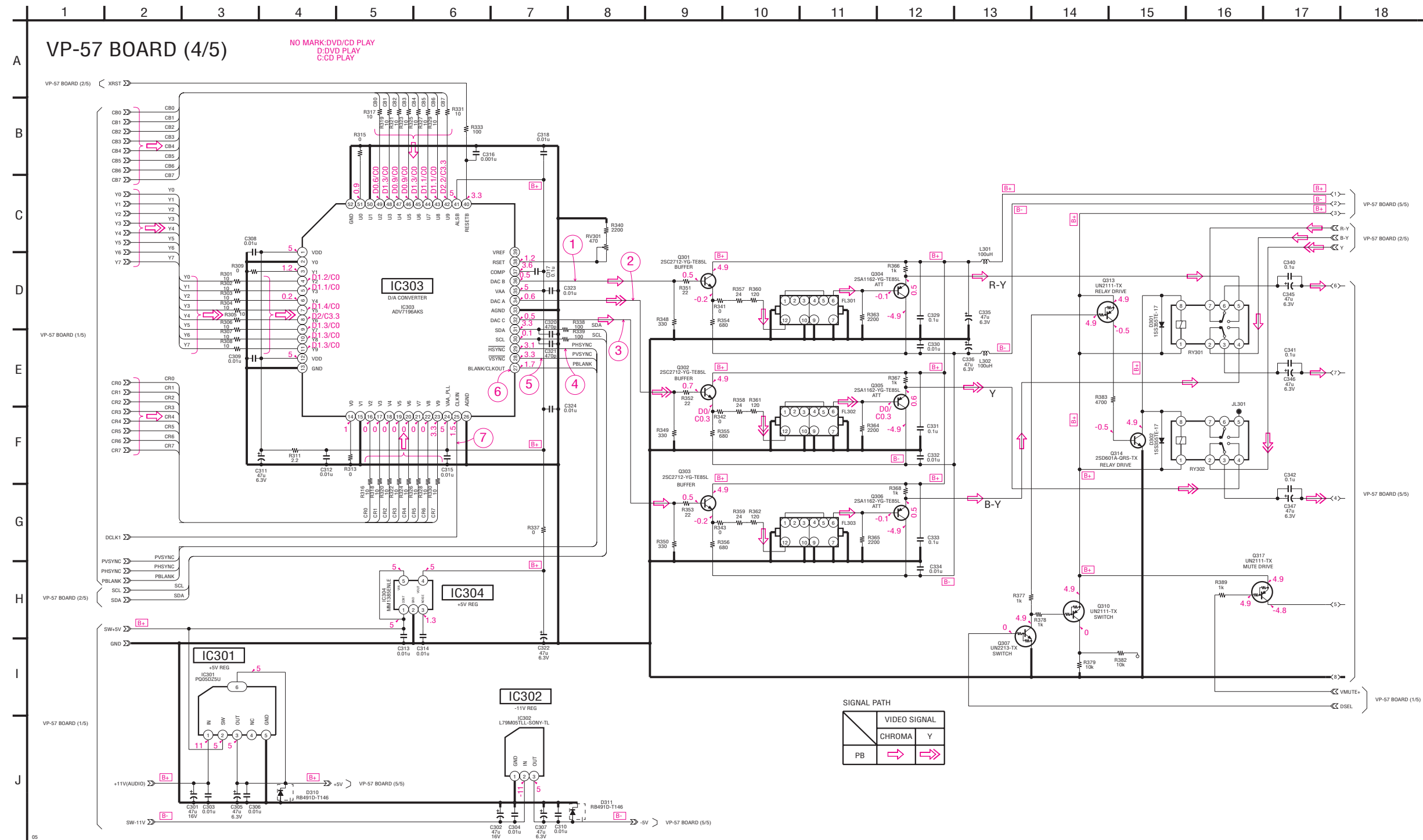


3.5 Vp-p (31.25 kHz)

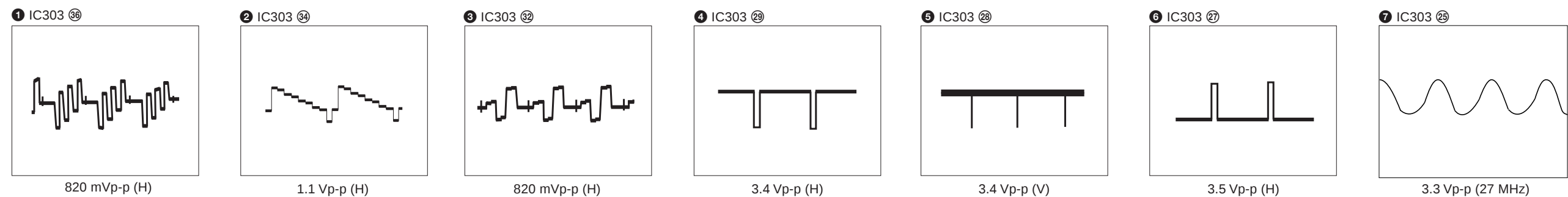
VP-57 (D/A CONVERTER) SCHEMATIC DIAGRAM • See page 4-59 for printed wiring board.

– Ref. No.: VP-57 board; 3,000 series –

– US, CND, MX, HK, KR –



- **Waveforms**



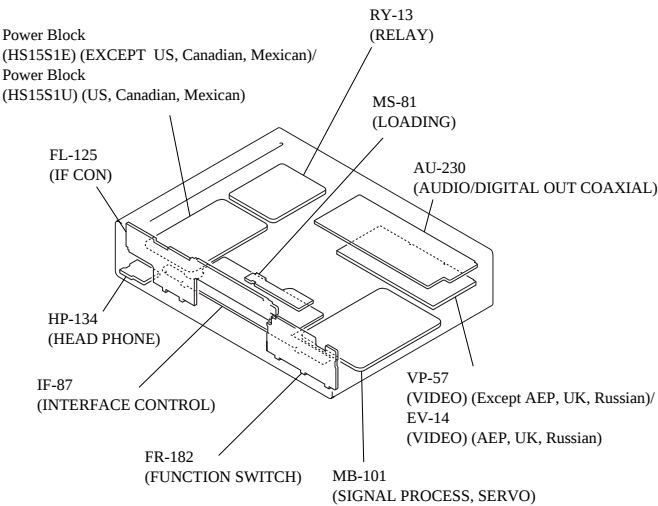
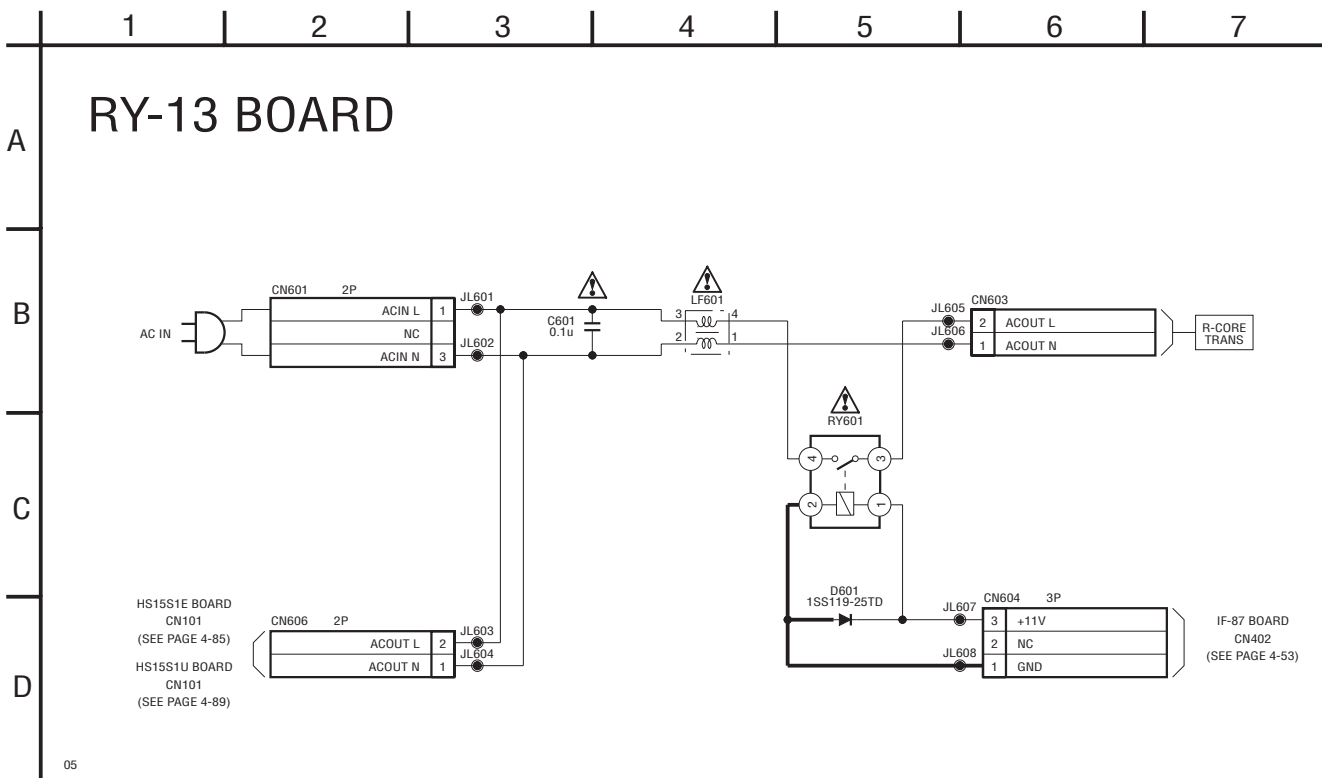
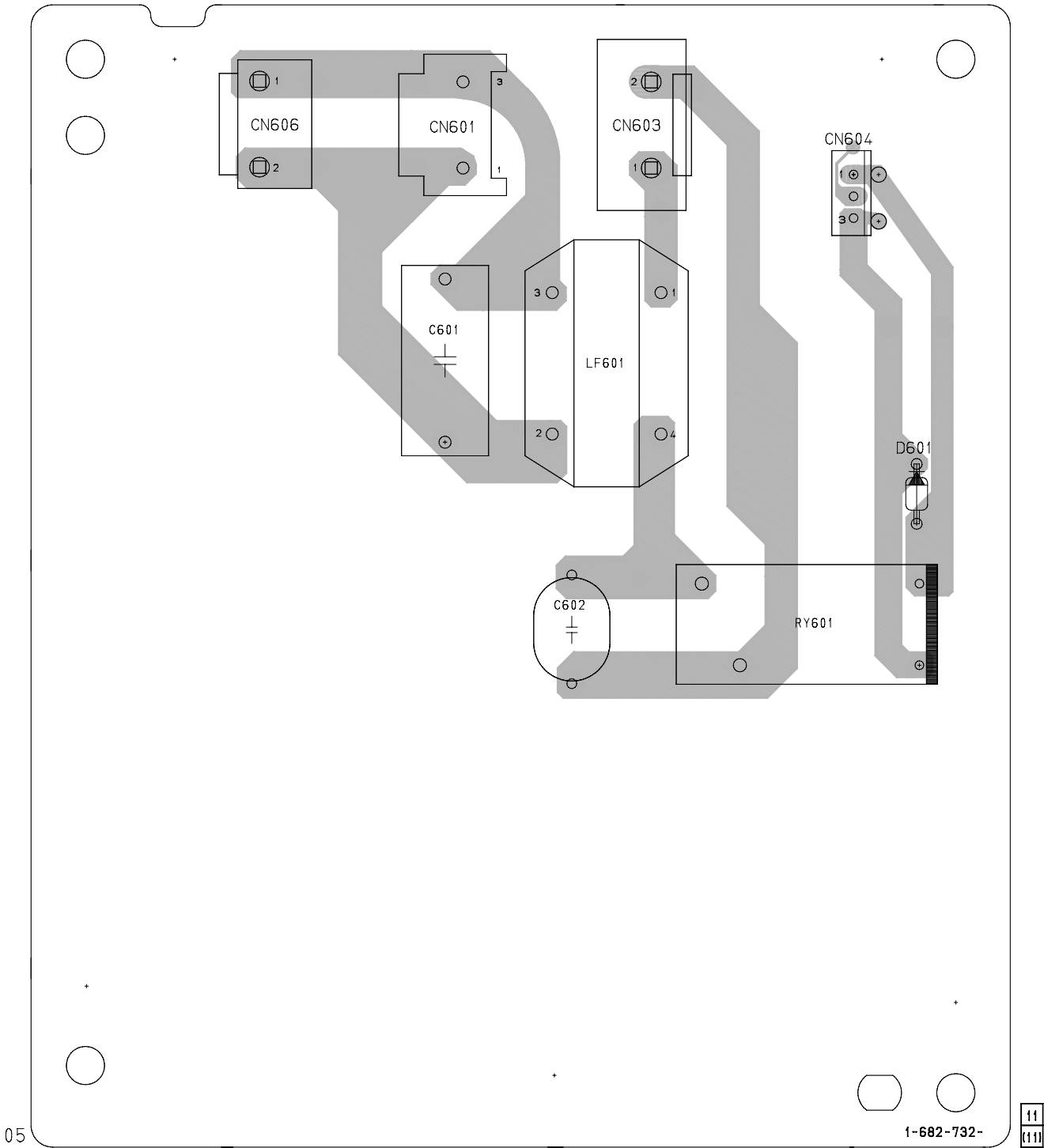
D/A CONVERTER

VP-57 (4/5)

RY-13 (RELAY) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM
– Ref. No.: RY-13 board; 1,000 series –

There are a few cases that the part isn't mounted in this model is printed on this diagram.

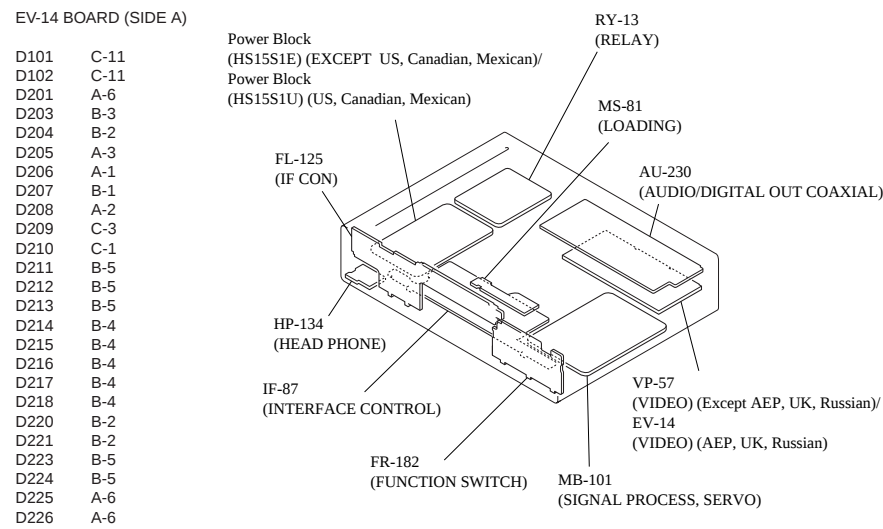
RY-13 BOARD



EV-14 (VIDEO ENCODER) SCHEMATIC DIAGRAM

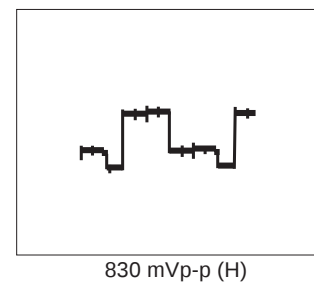
– Ref. No.: EV-14 board; 4,000 series –

– AEP, UK, RUS –

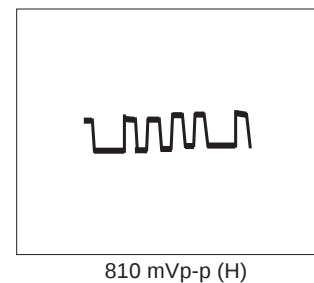


- **Waveforms**

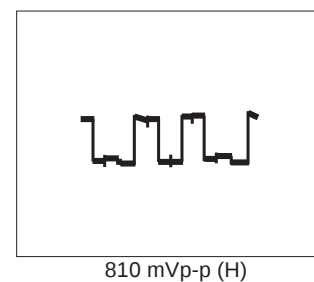
① IC102 ④⑤



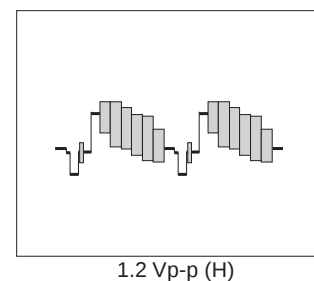
② IC102 ④④



③ IC102 ④



④ IC102 ④0



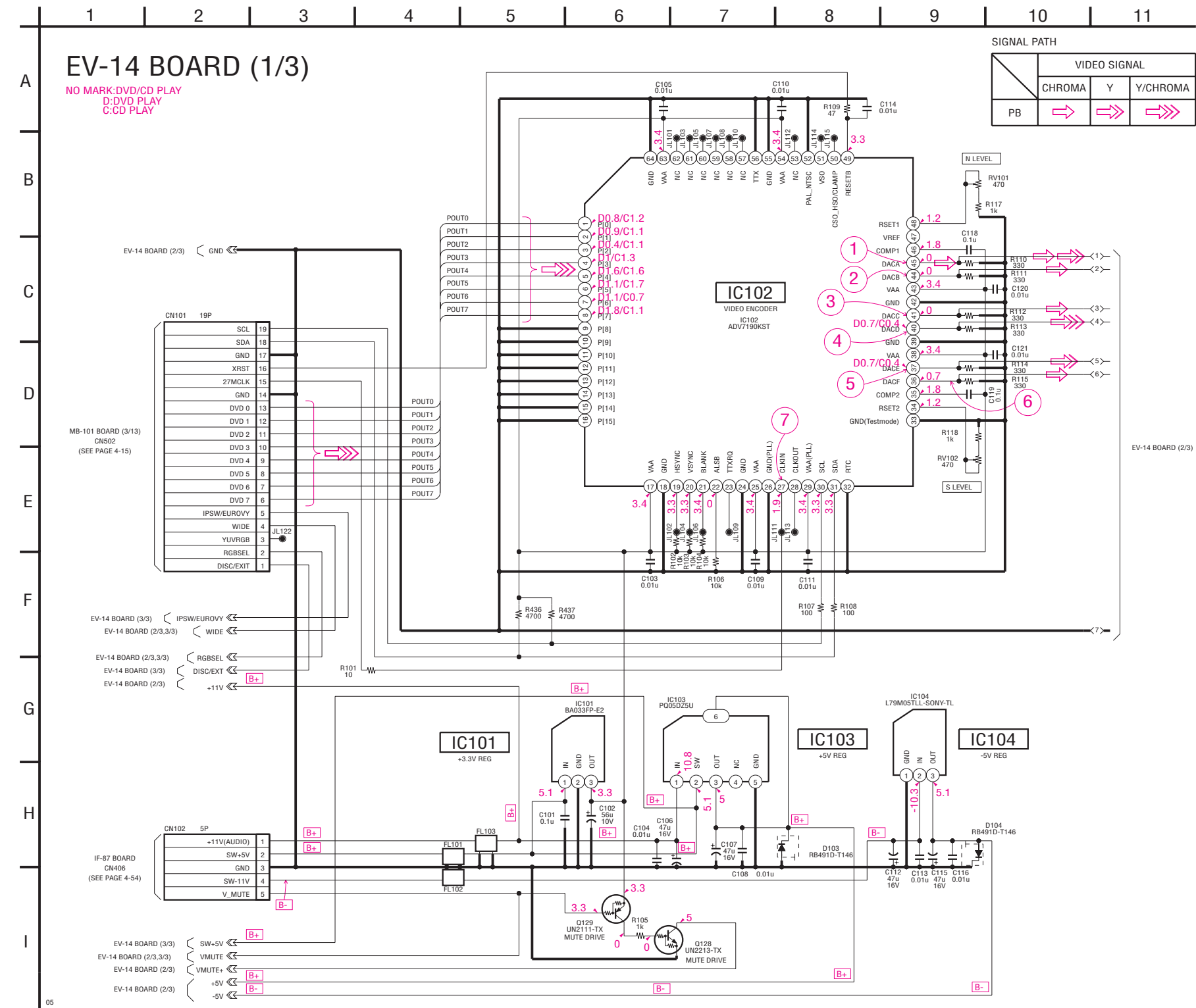
EV-14 BOARD (SIDE B)

CN101	C-11
CN102	C-7
CN201	C-3
CN202	A-2
CN203	A-5

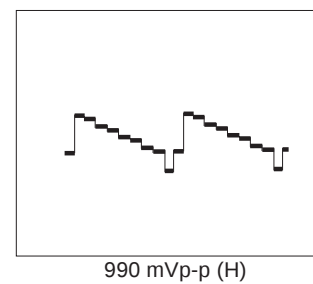
D103	B-7
D104	A-7
D202	B-5

IC101	B-6
IC102	C-11
IC103	B-7
IC104	A-7
IC105	A-12
IC106	A-11
IC107	A-9
IC201	B-4

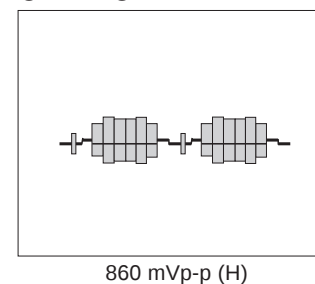
Q101	B-10
Q102	B-10
Q103	B-11
Q104	B-11
Q105	B-11
Q106	B-11
Q107	A-10
Q108	A-9
Q109	A-8
Q110	B-12
Q111	B-11
Q112	B-12
Q119	B-12
Q122	A-8
Q123	A-7
Q124	A-7
Q125	A-10
Q126	A-8
Q127	A-9
Q201	B-5
Q202	A-5
Q203	B-4
Q204	A-4
Q205	B-5
Q206	A-4
Q207	A-4



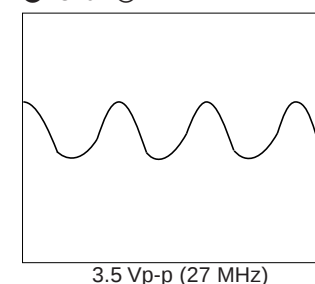
5 IC102 37



6 IC102 36

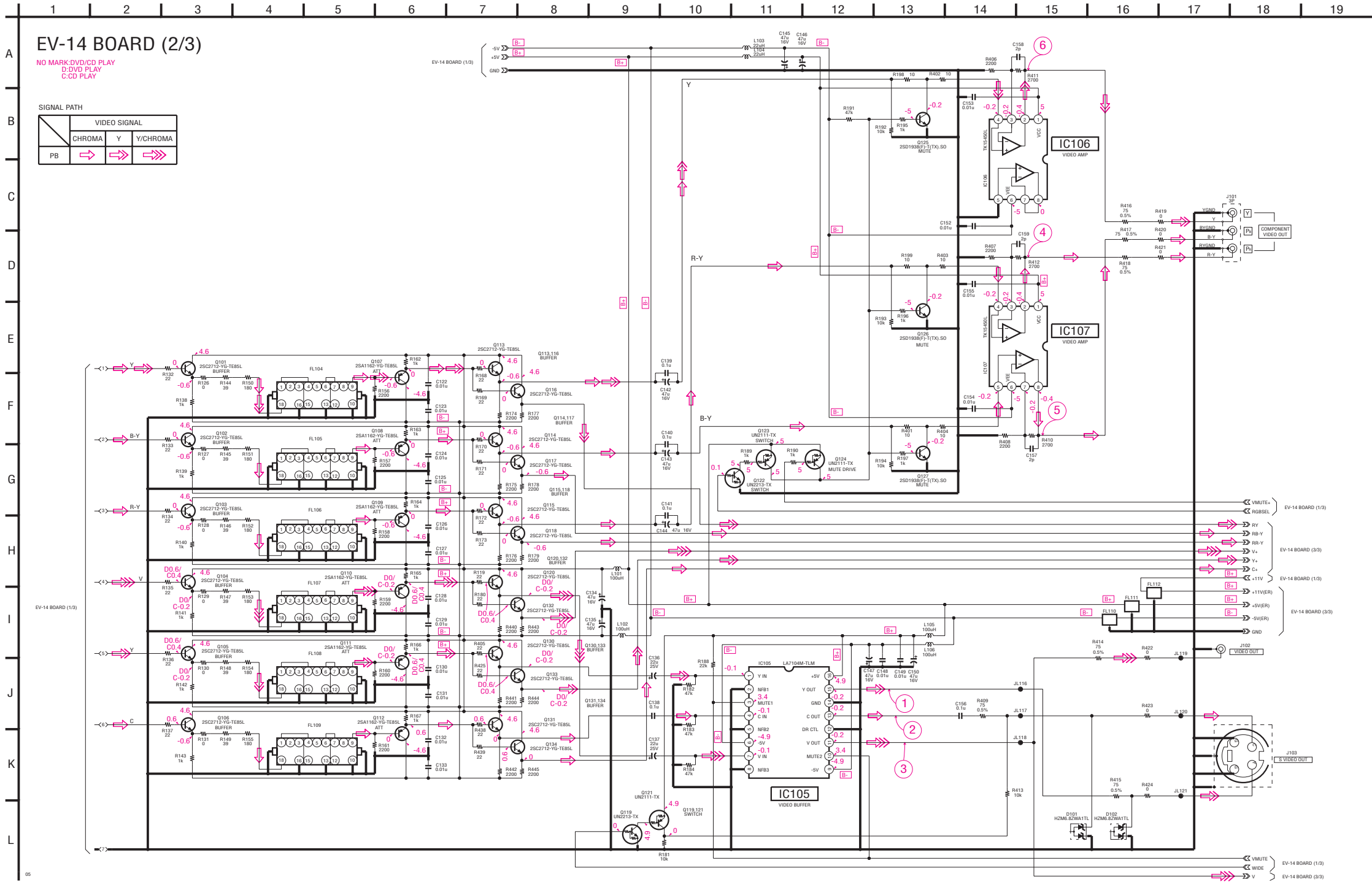


7 IC102 (27)



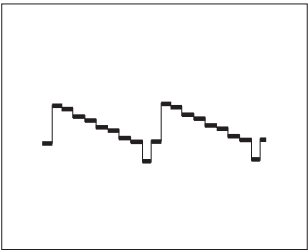
EV-14 (VIDEO BUFFER) SCHEMATIC DIAGRAM • See page 4-75 for printed wiring board.

– Ref. No.: EV-14 board; 4,000 series –
– AEP, UK, RUS –



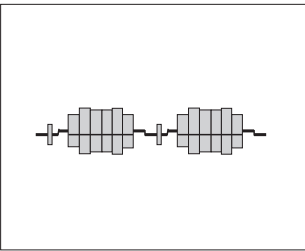
• Waveforms

1 IC105 15



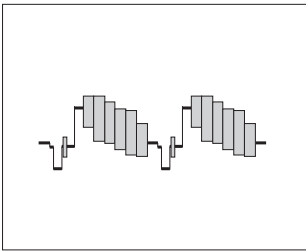
2.2 Vp-p (H)

2 IC105 13



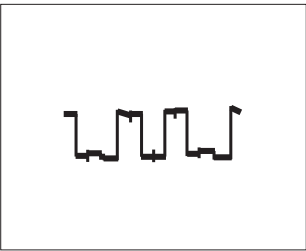
1.8 Vp-p (H)

3 IC105 11



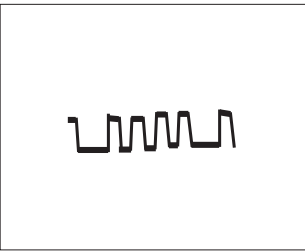
2.4 Vp-p (H)

4 IC107 2



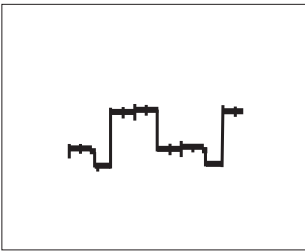
1.5 Vp-p (H)

5 IC107 8



1.5 Vp-p (H)

6 IC106 2

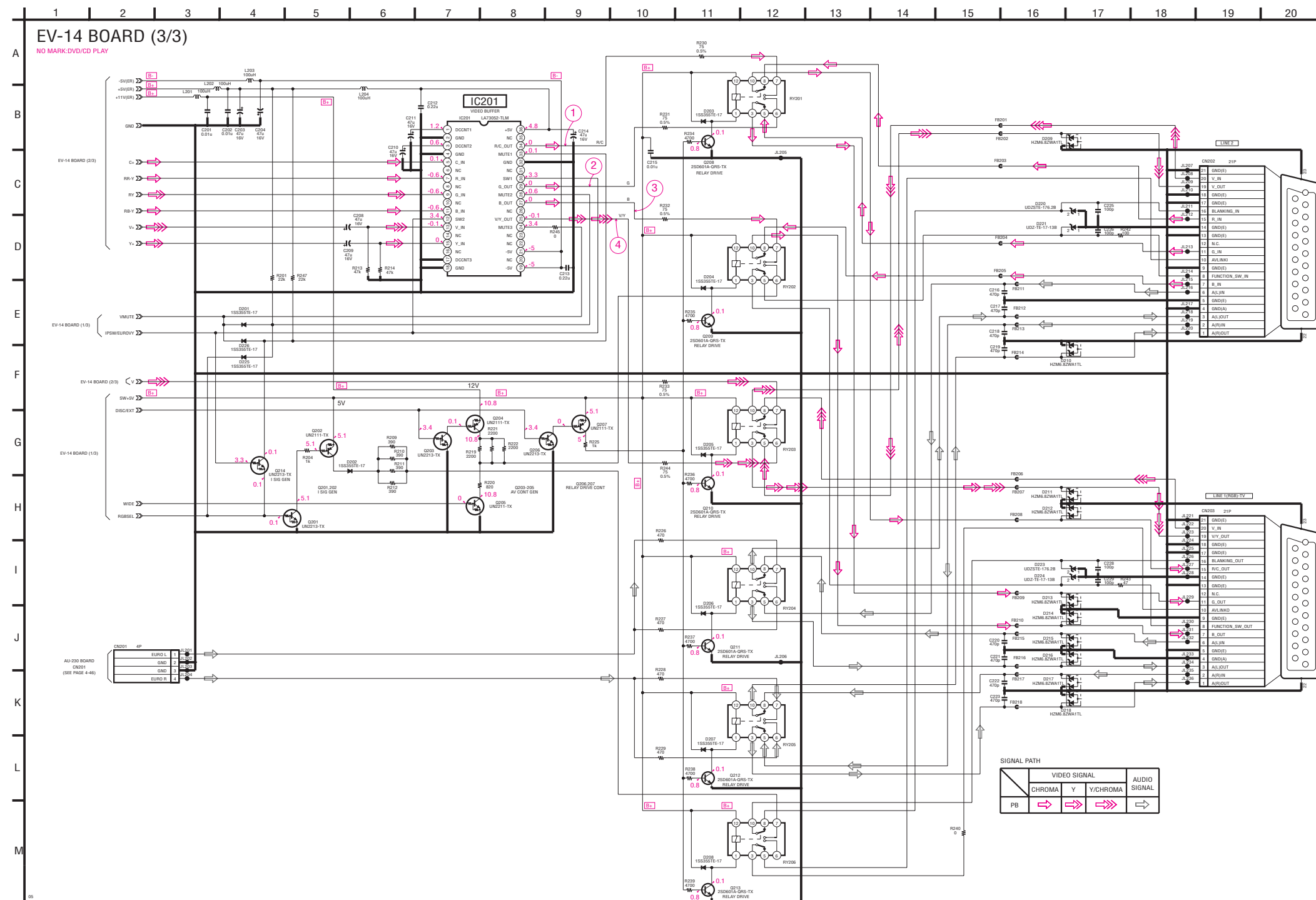


1.5 Vp-p (H)

EV-14 (EURO AV) SCHEMATIC DIAGRAM • See page 4-75 for printed wiring board.

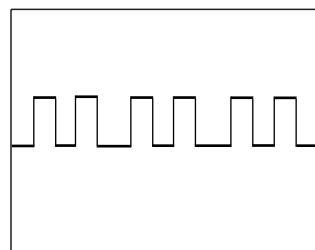
– Ref. No.: EV-14 board; 4,000 series –

– AEP, UK, RUS –



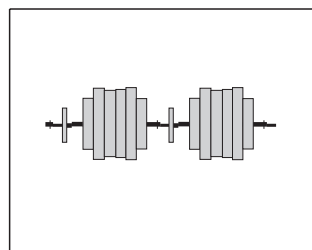
- **Waveforms**

① IC201 ③④ (LINE : RGB mode)



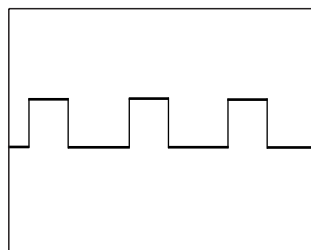
1.4 Vp-p (H)

① IC201 ③④ (LINE : S VIDEO mode)



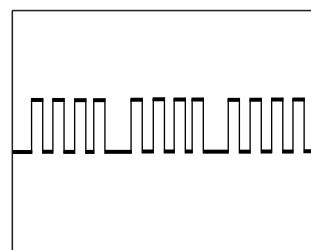
1.7 Vp-p (H)

② IC201 ②⑨ (LINE : RGB mode)



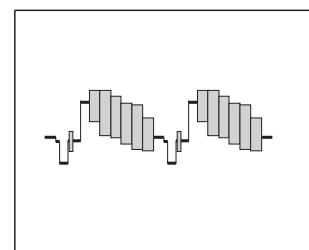
1.4 Vp-p (H)

③ IC201 ②⑦ (LINE : RGB mode)



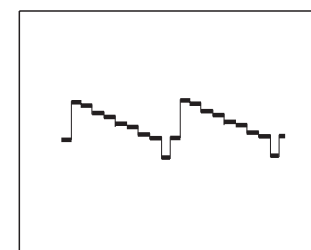
1.4 Vp-p (H)

④ IC201 ②⑤



2.4 Vp-p (H)

④ IC201 ②⑤ (LINE : S VIDEO mode)



2.0 Vp-p (H)

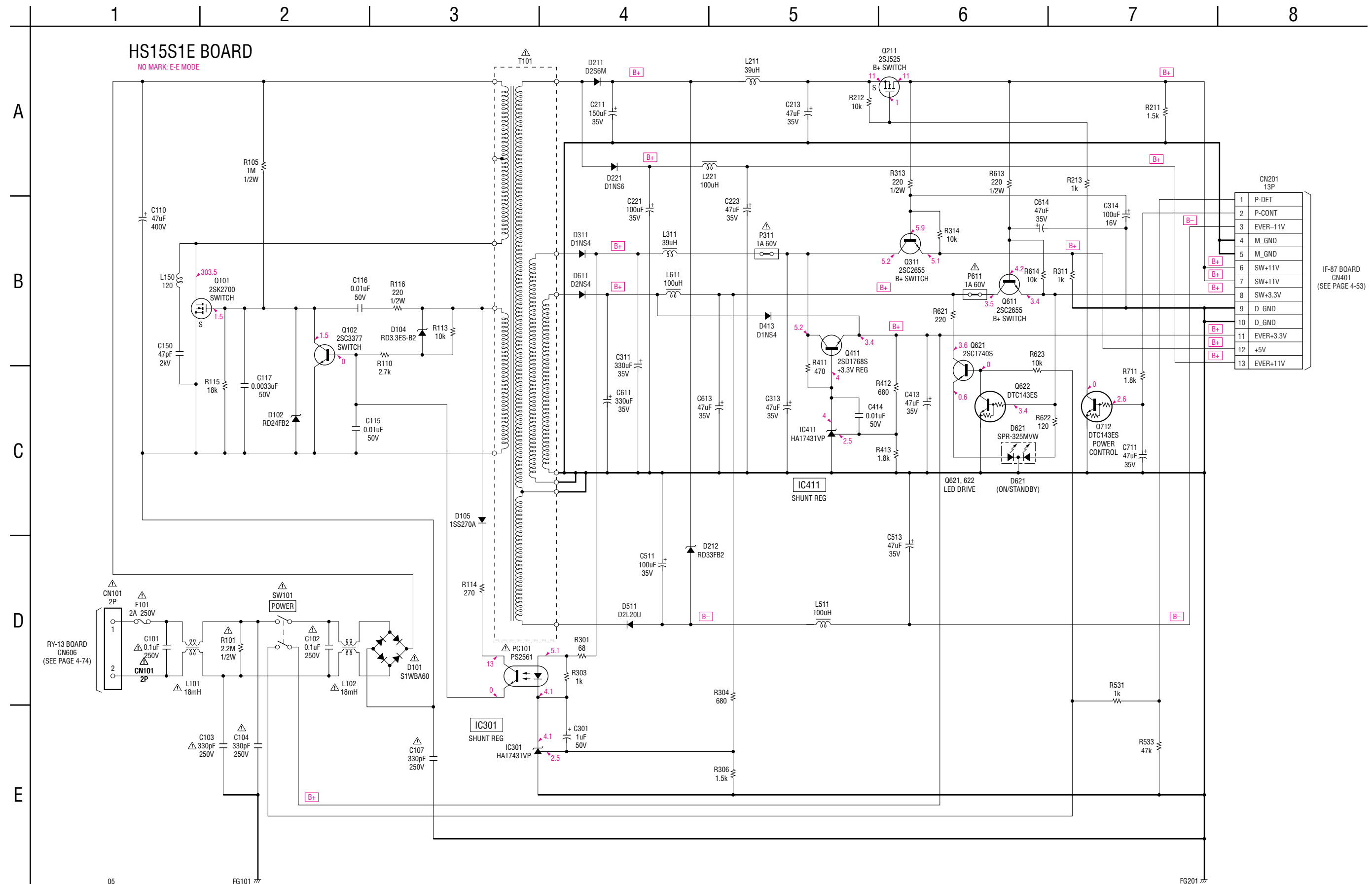
HS15S1E (SWITCHING REGULATOR) SCHEMATIC DIAGRAM

– Ref. No.: HS15S1E board; 3,000 series –

– AEP, UK, HK, KR, RUS –

The components identified by mark  or dotted line with mark  are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



5-1. SYSTEM CONTROL PIN FUNCTION (MB-101 BOARD IC104)

Pin No.	Pin name	I/O	Function
1-5	HA17-HA21	O	Address bus A17-A21
6	HA22	-	Not used
7	WP	O	Write control signal output to EEPROM
8	XSACS	O	Chip select signal output to SACD DECODER
9	AVCC	-	Power supply
10	AVRH	-	Reference power supply (+3.3 V)
11	AVSS	-	Ground
12	AN0	I	Set of mode 0
13	AN1	I	Set of mode 1
14	AN2	I	Set of mode 2
15	AN3	I	Set of mode 3
16	INT0	I	Input of interrupt from AV DEC
17	INT1	I	Input of interrupt from ARP
18	INT2	I	Input of interrupt from servo DSP
19	INT3	-	Not used
20	INT4	I	Input of interrupt from IF CON
21	INT5	-	Not used
22	INT6	-	Not used
23	INT7	-	Not used
24	VCC	-	Power supply
25	SI0	I	Serial data input from IF CON
26	SO0	O	Serial data output to IF CON
27	SC0	O	Serial clock output to IF CON
28	SI1	I	Serial bus 1 (for data input)
29	SO1	O	Serial bus 1 (for data output)
30	SC1	O	Serial clock output
31	SI2	I	Serial bus 2 (for data input)
32	SO2	O	Serial bus 2 (for data output)
33	YUV RGB	O	YUV/RGB select signal output (YUV: H, RGB: L)
34	VSS	-	Ground
35	XRST	O	System reset signal output
36	XARPRST	O	Reset signal output for ARP
37	RGBSEL	O	RGB signal select signal output/Mic mute signal output
38	SDA	I/O	I2C bus serial data input/output

Pin No.	Pin name	I/O	Function
39	SCL	O	I2C bus serial clock output
40	DVD SADC	O	DVD/SACD select signal output (DVD: L, SACD: H)
41	EUROV	O	EURO V/Y select signal output/Mute signal output to video buffer
42	DISCEXT	O	Line input select signal output (DISC: "H", EXT: "L")
43	MD0	I	Input of mode select 0 (fixed at "H")
44	MD1	I	Input of mode select 1 (fixed at "L")
45	MD2	I	Input of mode select 2 (fixed at "L")
46	DREQ0	I	Input of DMA-REQ 0 from AV DEC
47	DACK0	O	Output of DMA-ACK 0 to AV DEC
48	XDRVMUTE	O	Drive mute signal output
49	DREQ1	I	Input of DMA-REQ 1 from AV DEC
50	DACK1	O	Output of DMA-ACK 1 to AV DEC
51	XIFCS	O	Chip select signal to IF CON
52	VSS	-	Ground
53	X1	O	Clock output (16.5 MHz)
54	X2	I	Clock input (16.5 MHz)
55	VCC	-	Power supply
56	CKSW1	I	Chuck sensor input
57	OCSW1	I	Tray sensor input
58	CS0X	O	External ROM chip select signal output
59	CS1X	-	Not used
60	CS2X	O	Chip select signal output (for AV DEC)
61	CS3X	O	Chip select signal output (for AV DEC)
62	CS4X	O	Chip select signal output (for ARP)
63	CS5X	O	Chip select signal output (for servo DSP)
64	C	-	Capacitor (0.1uF) connect between ground
65	CS6X	-	Not used
66	CS7X	-	Not used
67	XWAIT	I	Wait signal input
68	BGRNTX	-	Test terminal (fixed at "H")
69	BRQ	-	Test terminal
70	XRD	O	Read enable signal output

Pin No.	Pin name	I/O	Function
71	XWRH	O	High byte write enable signal output (16 bit and 8 bit)
72	XWRL	-	Not used
73	NMIX	-	Not used (fixed at “H”)
74	HSTX	-	Not used (fixed at “H”)
75	VSS	-	Ground
76	XFRRST	I	Reset signal input from IF CON
77	CPUCK	O	CPU clock signal output
78	XBMCS	O	Chip select signal output to DSD_DSP
79	XDACS	O	Chip select signal output to DAC (2ch, 6ch)
80	VESCS/X39CS	O	Chip select signal output to DSP
81	48/44.1K	O	PLL FS control signal output
82	WIDE	O	WIDE select signal output
83	MAMUTE	O	Audio mute signal output
84	XLDON	O	LD control signal output
85-92	HD0-HD7	I/O	Data bus D0-D7 (16 bit only)
93-100	HD8-HD15	I/O	Data bus D8-D15 (16 bit) , D0-D7 (8 bit)
101	VSS	-	Ground
102-109	HA0-HA7	O	Address bus A00-A07
110	VCC	-	Power supply
111-118	HA8-HA15	O	Address bus A08-A15
119	VSS	-	Ground
120	HA16	O	Address bus A16

SECTION 6 TEST MODE

6-1. GENERAL DESCRIPTION

The Test Mode allows you to make diagnosis and adjustment easily using the remote commander and monitor TV. The instructions, diagnostic results, etc. are given on the on-screen display (OSD).

Note: Since the remote commander belongs to this model has no number buttons, use other DVD remote commander with number buttons on it.

6-2. STARTING TEST MODE

Press the **[TITLE]**, **[CLEAR]**, **[POWER]** keys on the remote commander in this order with the power of main unit in OFF status, and the Test Mode starts, then "DIAG START" will be displayed on the fluorescent display tube and the menu shown below will be displayed on the TV screen. At the bottom of menu screen, the model name and revision number are displayed. Last Off at the lower right of screen indicates the information code concerning the last power off.

To execute each function, select the desired menu and press its number on the remote commander.

To exit from the Test Mode, press the **[POWER]** key.

```

Test Mode Menu

0. Syscon Diagnosis
1. Drive Auto Adjustment
2. Drive Manual Operation
3. Mecha Aging
4. Emergency History
5. Version Information
6. Video Level Adjustment
Exit: POWER Key
-
Model : DPX-144xxx
Revision : 1.xxxx Last Off: xx

```

Power Off Information Code List

- 00 : Primary Power Off
- 01 : Power Off Request from SYSTEM CONTROL
- 02 : Power Off by Emergency Power Off Command from SYSTEM CONTROL
(if information is sent from SYSTEM CONTROL)
- 03 : IF CON Judged that SYSTEM CONTROL is Faulty
- 04 : Power Off from Diagnosis Mode of IF CON
- 05 : Forced Power Off by the User
- 06 : Power Off by Power Supply Voltage Monitor

6-3. SYSCON DIAGNOSIS

The same contents as board detail check by serial interface can be checked from the remote commander.

On the Test Mode Menu screen, press **[0]** key on the remote commander, and the following check menu will be displayed.

```

### Syscon Diagnosis ###
Check Menu

0. Quit
1. All
2. Version
3. Peripheral
4. Servo
5. Supply
6. AV Decoder
7. Video
8. Audio
-

```

0. Quit

Quit the Syscon Diagnosis and return to the Test Mode Menu.

1. All

All items continuous check

This menu checks all diagnostic items continuously. Normally, all items are checked successively one after another automatically unless an error is found, but at a certain item that requires judgment through a visual check to the result, the following screen is displayed for the key entry.

```

### Syscon Diagnosis ###

Diag All Check
No. 2 Version

2-3. ROM Check Sum
Check Sum = xxxx

Press NEXT Key to Continue
Press PREV Key to Repeat
-

```

For the ROM Check, the check sum calculated by the Syscon is output, and therefore you must compare it with the specified value for confirmation.

Following the message, press **[NEXT]** key to go to the next item, or **[PREV]** key to repeat the same check again. To quit the diagnosis and return to the Check Menu screen, press **[STOP]** or **[ENTER]** key. If an error occurred, the diagnosis is suspended and the error code is displayed as shown below.

```

### Syscon Diagnosis ###

3-3. EEPROM Check
Error 03: EEPROM Write/Read N
Address : 00000001
Write Data : 2492
Read Data : 2490
Press NEXT Key to Continue
Press PREV Key to Repeat
-

```

Press **[STOP]** key to quit the diagnosis, or **[PREV]** key to repeat the same item where an error occurred, or **[NEXT]** key to continue the check from the item next to faulty item.

Submenu

Selecting 2 and subsequent items calls the submenu screen of each item.

For example, if “5. Supply” is selected, the following submenu will be displayed.

Syscon Diagnosis ### Check Menu No. 5 Supply 0. Quit 1. All 2. ARP Register Check 3. ARP to RAM Data Bus 4. ARP to RAM Address Bus 5. ARP RAM Check —

0. Quit

Quit the submenu and return to the main menu.

1. All

All submenu items continuous check.

This menu checks 2 and subsequent items successively. At the item where visual check is required for judgment or an error occurred, the checking is suspended and the message is output for key entry. Normally, all items are checked successively one after another automatically unless an error is found.

Selecting 2 and subsequent items executes respective menus and outputs the results.

For the contents of each submenu, see “General Description of Checking Method” and “Check Items List”.

General Description of Checking Method

2. Version

(2-2) Revision

ROM revision number is displayed.

Error: Not detected.

The revision number defined in the source file of ROM (IC106 or 107) is displayed with four digits.

(2-3) ROM Check Sum

Check sum is calculated.

Error: Not detected.

8-bit data are added up to the ROM (IC106 or 107) address 0x000F0000 to 0x002EFFFF, and the result is displayed with 4-digit hexadecimal number. Error is not detected.

Compare the result with the specified value.

(2-4) Model Type

Model code is displayed.

Error: Not detected.

The model code read from the EEPROM is displayed with 2-digit hexadecimal number.

	Model Type	
US, CND	0	0
MX	0	2
AEP (DPX1441BM, DPX1441SM), UK	0	3
AEP (DPX1445BM, DPX1445NM)	0	4
RUS	0	5
HK, KR	0	7

• Abbreviation

CND : Canadian
 HK : Hong Kong
 KR : Korea
 RUS : Russian
 MX : Mexican

• Description about model name

DPX14xxBM

└─ Color of set

B : Black

H : Titanium gray

N : Gold

S : Silver

(2-5) Region

Region code is displayed.

Error: Not detected.

The region code determined from the model code is displayed.

3. Peripheral

(3-2) EEPROM Check

Data write → read, and accord check

Error 03: EEPROM write/read discord

0x9249, 0x2942 and 0x4294 are written to the address 0x00 to 0xFF of the EEPROM and then read for checking. Before writing, the data are saved, then after checking, they are written to restore the contents of EEPROM.

(3-3) Gate Array Check

Data write → read, and accord check

Error 02: Gate array write/read discord

Data of 0x00 to 0x03FO is written sequentially to the address 0xF and then read for checking.

(3-4) SACD Check

RAM Check (IC806)

Data write → read, and accord check

DSD-DSP Check (IC806)

Mix mode Register read, write check.

4. Servo

(4-2) Servo DSP Check

Data write → read, and accord check

Error 12: Read data discord

0x9249, 0x2942 and 0x4294 are written to the RAM address 0x602 of the Servo DSP and then read for checking. Also, OPT type “1 LASER” or “2 LASER” is displayed.

(4-3) DSP Driver Test

Test signal data → DSP Driver

Error: Not detected.

Caution: Do not perform this checking with the mechanical deck connected.

The maximum voltage is applied to the Servo Driver IC (IC202). If the mechanical deck is connected, it will be destroyed immediately. Following the output message, disconnect the mechanical deck, then enter the specified 4- or 5-digit value from the commander, and press the **[ENTER]** key. The test is conducted only if the entered value accords. To exit the test, check the output level, then press **[NEXT]** key.

This check is not conducted, but skipped in “All” menu item.

Supplement: How to disconnect mechanical deck

Disconnect flexible flat cables connected to the CN203 and CN204 of MB-101 board. Also, disconnect flat cable from the CN201.

5. Supply

(5-2) ARP Register Check

Data write → read, and accord check

Error 08: ARP register write, and read data discord

Data 0x00 to 0xFF is written sequentially to the ARP TMAX register (address 0xC6) and then read for checking.

(5-3) ARP to RAM Data Bus

Data write → read, and accord check

Error 09: ARP ↔ RAM data bus error

Data 0x0001 to 0x8000 where one bit each is set to 1 are written to the address 0 of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked. In case of discord, written bit pattern and read data are displayed. If data where multiple bits are 1 are read, the bits concerned may touch each other. Further, if data where certain bit is always 1 or 0 regardless of written data, the line could be disconnected or shorted.

(5-4) ARP to RAM Address Bus

Data write → other address read discord check

Error 10: ARP ↔ RAM address bus error

Caution: Address and data display in case of an error is different from the display of other diagnosis (described later).

Before starting the test, all addresses of RAM (IC303) are cleared to 0x0000.

First, 0xA55A is written to the address 0x00000, and the address data are read and checked from addresses 0x00001 to 0x80000 while shifting 1 bit each. Next, the data at that address is cleared, and it is written to the address 0x00001, and read and checked in the same manner. This check is repeated up to the address 0x80000 while shifting the address data by 1 bit each.

If data other than 0 is read at the addresses except written address, an error is given because all addresses were already cleared to 0. In this check, the error display pattern is different from that of other diagnosis; read data, written

address, and read address are displayed in this order. However, the message uses same template, and accordingly exchange Address and Data when reading. The following display, for example,

```
### Syscon Diagnosis ###
```

```
5-4. ARP to RAM Address Bus
Error 10: ARP - RAM Address B
Address   : 0000A55A
Write Data: 00000000
Read Data : 00080000
Press NEXT Key to Continue
Press PREV Key to Repeat
-
```

shows the data 0xA55A was read from address 0x00080000 though it was written to the address 0x00000000. This implies that these addresses are in the form of shadow. Also, if the read data is not 0xA55A, another error will be present.

(5-5) ARP RAM Check

Data write → read, and accord check

Error 11: ARP RAM read data discord

The program code data stored in ROM are copied to all areas of RAM (IC303) connected to the ARP (IC302) through the bus, then they are read and checked if they accord. If the detail check was selected initially, the data are written to all areas and read, then the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 11, and the test is suspended.

6. AV Decoder

(6-2) 1930 RAM

Data write → read, and accord check

Error 13: AVD RAM read data discord

The program code data stored in ROM (IC106 or 107) are copied to all areas of RAM (IC504) connected to the AVD (IC502) through the bus, then they are read and checked if they accord. Further, the same test is conducted once again with the data where all bits are inverted between 1 and 0. If discord is detected, faulty address, written data, and read data are displayed following the error code 13, and the test is suspended.

During the test, OSD display becomes blank as the OSD area is also checked.

(6-3) 1930 SP

ROM → AVD RAM → Video OUT

Error: Not detected.

The data including sub picture streams in ROM (IC107) are transferred to the RAM (IC507) in AVD (IC502), and output as video signals from the AVD (IC502).

Though OSD display becomes blank, the output of video signals continues until the key is pressed.

They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.

7. Video

- (7-2) Color Bar
 AVD color bar command write → Video OUT
 Error: Not detected.
 The command is transferred to the AVD, and the color bar signals are output from video terminals.
 They are output from all video terminals (Composite, Y/C, Component) except EURO AV terminal.
- (7-3) Composite Out (AEP, UK, RUS Model)
 EURO-AV Composite video output check
 AVD color bar command write → Video (EURO-AV Composite) OUT
 Error: Not detected.
 With the Component of video output turned off, the color bar signals are output from the EURO-AV terminal.
- (7-4) Y/C Out (AEP, UK, RUS Model)
 EURO-AV Y/C video output check
 AVD color bar command write → Video (EURO-AV Y/C) OUT
 Error: Not detected.
 With the Y/C of video output turned on, the color bar signals are output from the EURO-AV terminal.
- (7-5) RGB Out (AEP, UK, RUS Model)
 EURO-AV RGB video output check
 AVD color bar command write → Video (EURO-AV RGB) OUT
 Error: Not detected.
 With the RGB of video output turned on, the color bar signals are output from the EURO-AV terminal.
- (7-6) Component Out (AEP, UK, RUS Model)
 EURO-AV Component video output check
 AVD color bar command write → Video (EURO-AV Component) OUT
 Error: Not detected.
 With the Component of video output turned on, the color bar signals are output from the EURO-AV terminal.

8. Audio

- (8-2) ARP → 1930
 Error 14 : ARP → 1930 video NG
 15 : ARP → 1930 audio NG
- (8-3) Test Tone
 A pink noise signal is output from the AVD (IC503) through optical coaxial digital terminal and analog audio terminal.
 Error: Not detected.
 After turning on all outputs, each time the **[NEXT]** key is pressed, the output channel is switched for individual channel checking.
 Left + Right → Left → Right are checked in this order.

Check Items List

- 2) Version
 - (2-2) Revision
 - (2-3) ROM Check Sum
 - (2-4) Model Type
 - (2-5) Region
- 3) Peripheral
 - (3-2) EEPROM Check
 - (3-3) Gate Array Check
 - (3-4) SACD Check
- 4) Servo
 - (4-2) Servo DSP Check
 - (4-3) DSP Driver Test
- 5) Supply
 - (5-2) ARP Register Check
 - (5-3) ARP to RAM Data Bus
 - (5-4) ARP to RAM Address Bus
 - (5-5) ARP RAM Check
- 6) AV Decoder
 - (6-2) 1930 RAM
 - (6-3) 1930 SP
- 7) Video
 - (7-2) Color Bar
 - (7-3) Composite Out (AEP, UK, RUS Model)
 - (7-4) Y/C Out (AEP, UK, RUS Model)
 - (7-5) RGB Out (AEP, UK, RUS Model)
 - (7-6) Component Out (AEP, UK, RUS Model)
- 8) Audio
 - (8-2) ARP → 1930
 - (8-3) Test Tone

Error Codes List

- 00: Error not detected
- 01: RAM write/read data discord
- 02: Gate array NG
- 03: EEPROM NG
- 04: Flash memory clear error
- 05: Flash memory write error
- 06: Flash memory read data discord
- 07: 2725 read data discord
- 08: ARP register read data discord
- 09: ARP ↔ RAM data bus error
- 10: ARP ↔ RAM address bus error
- 11: ARP RAM read data discord
- 12: Servo DSP NG
- 13: 1930 SDRAM NG
- 14: ARP → 1930 video NG
- 15: ARP → 1930 audio NG
- 16: 1910 UCODE download NG
- 17: System call error (function not supported)
- 18: System call error (parameter error)
- 19: System call error (illegal ID number)
- 20: System call error (time out)
- 21: NAND Flash faulty blocks exceed 10
- 90: Error occurred
- 91: User verification NG
- 92: Diagnosis cancelled

6-4. DRIVE AUTO ADJUSTMENT

On the Test Mode Menu screen, press **[1]** key on the remote commander, and the drive auto adjustment menu will be displayed.

```

## Drive Auto Adjustment ##

      Adjustment Menu

0. ALL
1. DVD-SL
2. CD
3. DVD-DL
4. LCD

Exit: RETURN

```

Normally, **[0]** is selected to adjust DVD (single layer), CD, DVD (dual layer), and LCD (SACD) in this order. But, individual items can be adjusted for the case where adjustment is suspended due to an error. In this mode, the adjustment can be made easily through the operation following the message displayed on the screen. Which disc is currently adjusted is displayed on the fluorescent display tube.

The disc used for adjustment must be the one specified for adjustment.

0. ALL

You will be asked if EEPROM data are initialized or not, and for this prompt, select **[0]** and press the **[ENTER]** key. First, the servo setting data in EEPROM, Emergency History and Hour Meter are cleared to initialize. Then, 1. DVD-SL disc, 2. CD disc, 3. DVD-DL disc, and 4. LCD disc (SACD disc) are adjusted in this order. Each time one disc was adjusted, it is ejected, and therefore exchange the disc following the message. Though the message to confirm whether the discs is to be adjusted is not displayed except for LCD disk (SACD disk), you can exit the adjustment by pressing the **[STOP]** button. In adjusting each disc, the mirror time is measured to check the disk type. In the auto adjustment, whether the disc type is correct is not checked unlike conventional models, and accordingly, take care not to insert a different type of disc.

1. DVD-SL (single layer)

Select **[1]**, insert DVD single layer disc, and press **[ENTER]** key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Single Layer Disc Adjustment Steps

1. SLED TILT Reset
2. Disc Check Memory SL
3. Set Disc Type SL
4. Spdl Start
5. Wait 1 sec
6. LD ON
7. Focus Error Check
8. Focus ON 0
9. Auto Track Offset Adjust L0
10. Trv Level Check
11. Tracking ON
12. Wait 100 msec
13. CLVA ON
14. Wait 500 msec
15. Sled ON
16. Auto Loop Filter Offset Adjust
17. Auto Focus Gain Adjust L0
18. Auto Focus Balance Adjust L0
19. EQ Boost Adjust
20. Auto Loop Filter Offset Adjust
21. RF Level Measure
22. Jitter Disp ON
23. Jitter Memory
24. Jitter Disp OFF
25. Eep Copy Loop Filter Offset
26. All Servo Stop

2. CD

Select [2], insert CD disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

CD Adjustment Steps

1. Sled Tilt Reset
2. Disc Check Memory CD
3. Set Disc Type CD
4. Spdl Start
5. Wait 1 sec
6. LD ON
7. Focus Error Check
8. Fcs ON 1
9. Auto Track Offset Adjust L0
10. Trv Level Check
11. Tracking ON
12. Wait 100 msec
13. CLVA ON
14. Wait 500 msec
15. Sled ON
16. Auto Loop Filter Offset Adjust
17. Auto Focus Gain Adjust L0
18. Auto Focus Balance Adjust L0
19. Eq Boost Adjust
20. Auto Loop Filter Offset Adjust
21. Auto Track Gain Adjust
22. RF Level Measure
23. Jitter Disp ON
24. Jitter Memory
25. Jitter Disp OFF
26. All Servo Stop

3. DVD-DL (dual layer)

Select [3], insert DVD dual layer disc, and press [ENTER] key, and the adjustment will be made through the following steps, then adjusted values will be written to the EEPROM.

DVD Dual Layer Disc Adjustment Steps

1. Sled Tilt Reset
2. Disc Check Memory DL
3. Set Disc Type DL

Layer 1 Adjust

4. Spdl Start (Wait 1 sec)
5. LD ON
6. Fcs ON 1
7. Auto Track Offset Adjust L1
8. Tracking ON
9. Wait 100 msec
10. Clva ON (Wait 500 msec)
11. Sled ON
12. Auto Focus Gain Adjust L1
13. Auto Focus Balance Adjust L1
14. Eq Boost Adjust L1
15. Auto Track Gain Adjust L1
16. Jitter Disp ON
17. Jitter Memory
18. Jitter Disp Off

Layer 0 Adjust

19. Focus Jump (L1 → L0)
20. Auto Track Offset Adjust L0
21. Tracking ON (Wait 100 msec)
22. Clva ON (Wait 500 msec)
23. Sled ON
24. Auto Focus Gain Adjust L0
25. Auto Focus Balance Adjust L0
26. Eq Boost Adjust L0
27. Auto Track Gain Adjust L0
28. Jitter Disp ON
29. Jitter Memory
30. Jitter Disp OFF
31. All Servo Stop

4. LCD (SACD)

This model does not adjust it because the adjusted data of CD are reflected.

6-5. DRIVE MANUAL OPERATION

On the Test Mode Menu screen, select [2], and the manual operation menu will be displayed. For the manual operation, each servo on/off control and adjustment can be executed manually.

```
## Drive Manual Operation ##

      Operation Menu
1. Disc type
2. Servo Control
3. Track/Layer Jump
4. Manual Adjustment
5. Auto Adjustment
6. Memory Check

0. Disc Check Memory

Exit: RETURN
```

In using the manual operation menu, take care of the following points. These commands do not provide protection, thus requiring correct operation. The sector address or time code field is displayed when a disc is loaded.

1. Set correctly the disc type to be used on the Disc Type screen.
The disc type must be set after a disc was loaded.
The set disc type is cleared when the tray is opened.
2. After power ON, if the Drive Manual Operation was selected, first perform "Reset SLED TILT" by opening 1. Disc Type screen.
3. In case of an alarm, immediately press the [STOP] button to stop the servo operation, and turn the power OFF.

Basic operation (controllable from front panel or remote commander)

[POWER]	Power OFF
[STOP]	Servo stop
[OPEN/CLOSE]	Stop+Eject/Loading
[RETURN]	Return to Operation Menu or Test Mode Menu
[NEXT], [PREV]	Transition between sub modes of menu
[1] to [9], [0]	Selection of menu items
Cursor UP/DOWN	Increase/Decrease in manually adjusted value

0. Disc Check Memory

```
Disc Check

1. SL Disc Check
2. CD Disc Check
3. DL Disc Check

0. Reset SLED TILT
```

On this screen, the mirror time is measured and written to the EEPROM to check the disc type. First, set a DVD SL disc and press [1], then set a CD disc and press [2], and finally set a DVD DL disc and press [3]. The measured mirror time is displayed respectively.

The adjustment must be executed more than once after default data were written.

Reference value for DVD is from 10 to 20, and for CD, from 28 to 4F. Check that the value of CD is larger than that of DVD. When those values are beyond a range perform this adjustment again. From this screen, you can go to another mode by pressing [NEXT] or [PREV] key, but you cannot enter this mode from another mode. You can enter this mode from the Operation Menu screen only.

1. Disc Type

```
Disc Type

1. Disc Type Auto Check
2. DVD SL 12 cm
3. DVD DL 12 cm
4. CD 12cm
5. LCD 12 cm
6. DVD SL 8 cm
7. DVD DL 8 cm
8. CD 8 cm
9. LCD 8 cm
0. Reset SLED TILT

EMG. 00
```

On this screen, select the disc type. To select the disc type, press the number of the loaded disc. The selected disc type is displayed at the bottom. Selecting [1] automatically selects and displays the disc type. In case of wrong display, retry "Disc Check Memory". Also, opening the tray causes the set disc type to be cleared. In this case, set the disc type again after loading.

In performing manual operation, the disc type must be set.

Once the disc type has been selected, the sector address or time code display field will appear as shown below. These values are displayed when PLL is locked.

```
Disc Type

1. Disc Type Auto Check
2. DVD SL 12 cm
3. DVD DL 12 cm
4. CD 12cm
5. LCD 12 cm
6. DVD SL 8 cm
7. DVD DL 8 cm
8. CD 8 cm
9. LCD 8 cm
0. Reset SLED TILT

SA.----- SI.-- EMG. 00
DVD SL 12 cm
```

Display when DVD SL 12cm disc was selected

Disc Type	
1. Disc Type Auto Check	
2. DVD SL	12 cm
3. DVD DL	12 cm
4. CD	12cm
5. LCD	12 cm
6. DVD SL	8 cm
7. DVD DL	8 cm
8. CD	8 cm
9. LCD	8 cm
0. Reset SLED TILT	
TC.-----:----- EMG. 00	
CD	12 cm

Display when CD 12cm disc was selected

- [0] Reset SLED TILT Reset the Sled and Tilt to initial position.
- [1] Disc Type Check Judge automatically the loaded disc. As the judged result is displayed at the bottom of screen, make sure that it is correct.
If Disc Check Memory menu has not been executed after EEPROM default setting, the disc type cannot be judged. In this case, return to the initial menu and make a check for three types of discs (SL, DL, CD).
- [2] to [9] Select the loaded disc. The adjusted value is written to the address of selected disc. No further entry is necessary if [1] was selected.

2. Servo Control

Servo Control	
1. LD	Off R. Sled FWD
2. SP	Off L. Sled REV
3. Focus	Off
4. TRK.	Off
5. Sled	Off
6. CLVA	Off
7. FCS. Srch	Off
0. Reset SLED TILT	
SA.----- SI.--- EMG. 00	
DVD SL	12 cm

On this screen, the servo on/off control necessary for replay is executed. Normally, turn on each servo from 1 sequentially and when CLVA is turned on, the usual trace mode becomes active. In the trace mode, DVD sector address or CD time code is displayed. This is not displayed where the spindle is not locked. The spindle could run overriding the control if the spindle system is faulty or RF is not present. In such a case, do not operate CLVA.

- [0] Reset SLED TILT Reset the Sled and Tilt to initial position.
- [1] LD Turn ON/OFF the laser.
- [2] SP Turn ON/OFF the spindle.
- [3] Focus Search the focus and turn on the focus.
- [4] TRK Turn ON/OFF the tracking servo.

- [5] Sled Turn ON/OFF the sled servo.
- [6] CLVA Turn ON/OFF normal servo of spindle servo.
- [7] FCS. Srch Apply same voltage as that of focus search to the focus drive to check the focus drive system.
- [→] Sled FWD Move the sled outward. Perform this operation with the tracking servo turned off.
- [←] Sled REV Move the sled inward. Perform this operation with the tracking servo turned off.

3. Track/Layer Jump

Tracking/Layer Jump	
1. 1Tj FWD	R. Fj (L1 → L0)
2. 1Tj REV	L. Fj (L0 → L1)
3. 2Tj FWD	U. Lj (L1 → L0)
4. 2Tj REV	D. Lj (L0 → L1)
5. NTj FWD	
6. NTj REV	
7. 500Tj FWD	
8. 500Tj REV	
9. 10k/20k FWD	
0. 10k/20k REV	
SA.----- SI.--- EMG. 00	
DVD SL	12 cm

On this screen, track jump, etc. can be performed. Only for the DVD-DL, the focus jump and layer jump are displayed in the right field.

- [1] 1Tj FWD 1-track jump forward.
- [2] 1Tj REV 1-track jump reverse.
- [3] 2Tj FWD 2-track jump forward.
- [4] 2Tj REV 2-track jump reverse.
- [5] NTj FWD N-track jump forward.
- [6] NTj REV N-track jump reverse.
- [7] 500Tj FWD Fine search forward.
- [8] 500Tj REV Fine search reverse.
- [9] 10k/20k FWD Direct search forward.
- [0] 10k/20k REV Direct search reverse.

– The following commands are valid for DVD-DL disc only –

- [→] Fj (L1 → L0) Focus jump forward. (Trk/Sled Servo OFF)
- [←] Fj (L0 → L1) Focus jump reverse. (Trk/Sled Servo OFF)
- [↑] Lj (L1 → L0) Layer jump forward. (Trk/Sled Servo ON)
- [↓] Lj (L0 → L1) Layer jump reverse. (Trk/Sled Servo ON)

4. Manual Adjustment

Manual Adjustment	
1. TRK. Offset	
2. Focus Gain	
3. TRK. Gain	
4. Focus Offset	
5. Focus Balance	
6. L.F. Offset	
7. EQ BOOST	
8. GD ADJ	
Adjustment : Up/Down	
	Jitter 1D
SA.----- SI.-- EMG. 00	
DVD SL 12 cm	

On this screen, each item can be adjusted manually. Select the desired number [1] to [8] from the remote commander, and current setting for the selected item will be displayed, then increase or decrease numeric value with [↑] key or [↓] key. This value is stored in the EEPROM. If CLV has been applied, the jitter is displayed for reference for the adjustment.

- [1] TRK. Offset Adjusts tracking offset.
- [2] Focus Gain Adjusts focus gain.
- [3] TRK. Gain Adjusts track gain.
- [4] Focus Offset Adjusts focus offset.
- [5] Focus Balance Adjusts focus balance.
- [6] L.F. Offset Adjusts loop filter offset.
- [7] EQ BOOST
- [8] GD ADJ

5. Auto Adjustment

Auto Adjustment	
1. Auto TRK. Offset	
2. Auto Focus Balance	
3. Auto Focus Offset	
4. Auto Focus Gain	
5. Auto TRK. Gain	
6. Auto EQ	
7. Auto L.F. Offset	
8. Auto Group Delay	
SA.----- SI.-- EMG. 00	
DVD SL 12 cm	

On this screen, each item can be adjusted automatically. Select the desired number [1] to [8] from the remote commander, and selected item is adjusted automatically.

- [1] Auto TRK. Offset Adjusts tracking offset.
- [2] Auto Focus Balance Adjusts focus balance.
- [3] Auto Focus Offset Adjusts focus offset.
- [4] Auto Focus Gain Adjusts focus gain.
- [5] Auto TRK. Gain Adjusts track gain.

- [6] Auto EQ
- [7] Auto L.F. Offset Adjusts loop filter offset.
- [8] Auto Group Delay

6. Memory Check

EEPROM DATA 1		-- DL --		
	CD LCD	SL	L0	L1
Focus Gain	xx xx	xx	xx	xx
TRK. Gain	xx xx	xx	xx	xx
FCS Balance	xx xx	xx	xx	xx
Focus Bias	xx xx	xx	xx	xx
TRV. Offset	xx xx	xx	xx	xx
L.F. Offset	xx xx	xx	xx	xx
EQ Boost	xx xx	xx	xx	xx
Mirror Time	xx --	xx	xx	
DOWN : Next Data				
CLEAR: Default Set			page. 1/2	

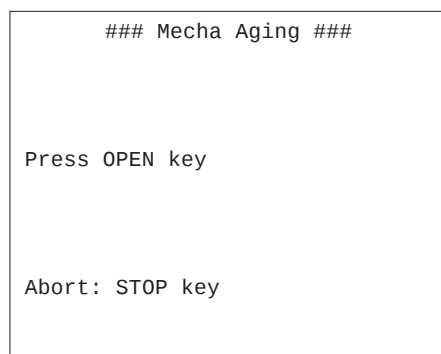
EEPROM DATA 2		-- DL --		
	CD LCD	SL	L0	L1
RF Jitter	xx --	xx	xx	xx
RF Level	xx --	xx	--	--
FE Level	xx --	xx	--	--
FE Balance	xx --	xx	--	--
TRV. Level	xx --	xx	--	--
Analog FRSW	xx xx	xx	xx	xx
PLL Dac Gain	xx xx	xx	xx	xx
UP : Prev Data				
CLEAR: Default Set			page. 2/2	

On this screen, current servo adjusted data stored in the EEPROM are displayed. The adjusted data are initialized by pressing the **CLEAR** key, but be careful that they are not recoverable after initialization.

Before clearing the adjusted data, make a note of the set data. This screen will also appear if [0] All is selected in the Drive Auto Adjustment. In this case, default setting cannot be made.

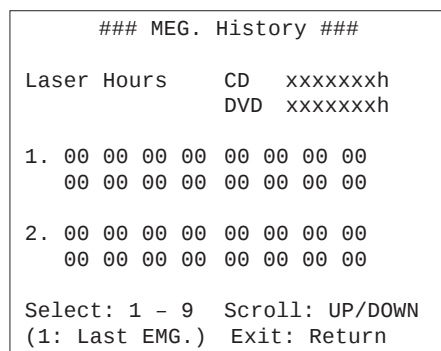
For reference, the drive has been designed so that the gain center value is 20 and offset value is 80. Other values will be in a range of 10 to 80. If extreme value such as 00 or FF is set, adjustment will be faulty. In such a case, check for disc scratch or cable disconnection, then perform adjustment again.

6-6. MECHA AGING



On the Test Mode Menu screen, selecting [3] executes the aging of mechanism. First, open the tray and load a disc. Press the [PLAY] key, and the aging will start. When the tray is closed, the disc type and size are judged and displayed. During aging, the repeat cycle is displayed. Aging can be aborted at any time by pressing the [STOP] key. After the operation has stopped, unload the disc and press again the [STOP] key or the [RETURN] key to return to the Test Mode Menu.

6-7. EMERGENCY HISTORY



On the Test Mode Menu screen, selecting [4] displays the information such as servo emergency history. The history information from last 1 up to 10 can be scrolled with [↑] key or [↓] key. Also, specific information can be displayed by directly entering that number with ten keys.

The upper two lines display the laser ON total hours. Data below minutes are omitted.

Clearing History Information

Clearing laser hours

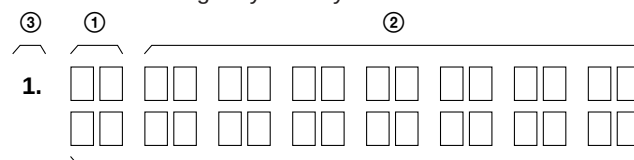
- Press [DISPLAY] and [CLEAR] keys in this order. Both CD and DVD data are cleared.

Clearing emergency history

- Press [TITLE] and [CLEAR] keys in this order. Initializing set up data

- Press [DVD] and [CLEAR] keys in this order. The data have been initialized when "Set Up Initialized" message is displayed. The EMG. History screen will be restored soon.

How to see Emergency History



①: Emergency Code

②: Don't Care

These codes are used for verification of software designing.

③: Historical order 1 to 9

Emergency Codes List

- 10: Communication to IC202 (MB-101 board) failed.
- 11: Each servo for focus, tracking, and spindle is unlocked.
- 12: Communication to EEPROM, IC101 (MB-101 board) failed.
- 13: Writing of hours meter data to EEPROM, IC101 (MB-101 board) failed.
- 14: Communication to Servo DSP IC302 (MB-101 board) failed, or Servo DSP is faulty.
- 20: Initialization of tilt servo and sled servo failed. They are not placed in the initial position.
- 21: Tilt servo operation error
- 22: Syscon made a request to move the tilt servo to wrong position.
- 23: Sled servo operation error
- 24: Syscon made a request to move the sled servo to wrong position.
- 30: Tracking balance adjustment error
- 31: Tracking gain adjustment error
- 32: Focus balance adjustment error
- 33: Focus bias adjustment error
- 34: Focus gain adjustment error
- 35: Tilt servo adjustment error
- 36: RF equalizer adjustment error
- 37: RF group delay adjustment error
- 38: Jitter value after adaptive servo operation is too large.
- 40: Focus servo does not operate.
- 41: With a dual layer (DL) disc, focus jump failed.
- 50: CLV (spindle) servo does not operate.
- 51: Spindle does not stop.
- 60: With a DVD disc, Syscon made a request to seek nonexistent address.
- 61: With a CD disc, Syscon made a request to seek nonexistent address.
- 62: With a CD disc, Syscon made a request to seek nonexistent track No. and index No.
- 63: With a DVD disc, seeking of target address failed.
- 64: With a CD disc, seeking of target address failed.
- 65: With a CD disc, seeking of target index failed.
- 70: With a DVD disc, physical information data could not be read.
- 71: With a CD disc, TOC data could not be read.
- 80: Disc type judgment failed.
- 81: As disc type judgment failed, retry was repeated.
- 82: As disc type judgment failed, a measurement error occurred.
- 83: Disc type could not be judged within the specified time.
- 84: Illegal command code was received from Syscon.
- 85: Illegal command was received from Syscon.

6-8. VERSION INFORMATION

```

## Version Information ##

IF con.   Ver : x. xxx (xxxx)
          Group   00

SYScon.   Ver : x. xxx (xxxx)
          Model   xx
          Region  0x
Servo DSP. Ver : 1. xxxx
OPT Type : x LASER

Exit: RETURN
—

```

The ROM version, region code, OPT type, etc. are displayed if [5] is selected in the Test Mode Menu.

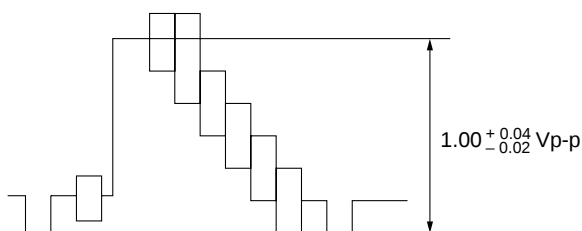
The parenthesized hexadecimal number in the version number field indicates the checksum value of the ROM.

Note : After down loading ROM data, sometimes it happens that checksum is not the same as that of ROM data which has been down loaded. In such a case, go back to the menu and select “0. Syscon Diagnosis”, then select “1. All” in “2. Version”. If the result of this operation does not give an agreement, it must be either Down Load error or ROM error.

6-9. VIDEO LEVEL ADJUSTMENT

On the Test Mode Menu screen, selecting [6] displays color bars for video level adjustment. During display of color bars, OSD disappears but the menu screen will be restored if pressing any key.

Measurement point : LINE OUT VIDEO
(75 Ω terminating resistance)
Measuring instrument : Oscilloscope
Adjustment device : RV501 on MB-101 board
Specified value : $1.00 \pm \begin{smallmatrix} 0.04 \\ 0.02 \end{smallmatrix}$ Vp-p



6-10. IF CON SELF DIAGNOSTIC FUNCTION

1. FL-125 BOARD (IF CON) TEST MODE

The front board test mode is the IF CON self diagnostic mode. The IF CON can diagnose the functions of the front panel boards that the IF CON controls. Normally, the IF CON makes a serial communication with the SYSTEM CONTROL and operates following the commands from the SYSTEM CONTROL, but in the Test mode, the IF CON operates independently from the SYSTEM CONTROL.

In the Test mode, the following functions can be checked.

1. Button function
2. Remote commander receiving function
3. SYSTEM CONTROL-IF CON serial communication
4. Click shuttle function
5. Fluorescent display tube lighting check
Grid check
Anode check
6. LED control function

In the Test mode, the set operates same as usual, except voltage monitoring, communication monitoring, display of fluorescent display tube, and LED control.

1. The routine that monitors +3.3 V (P-CONT) of MB-101 board is not provided.
2. The monitoring timer for serial communication with the SYSTEM CONTROL is not provided. The set is not placed in the Standby mode, even if the communication with SYSTEM CONTROL is normal.
3. Display of fluorescent display tube (normally, display is made following the commands from SYSTEM CONTROL)
4. LED control (normally, control is made following the commands from SYSTEM CONTROL)

2. OPERATION OF SELF CHECK MODE

The Self Check mode is the function to conduct the basic test to the FL display and DVD panel section.

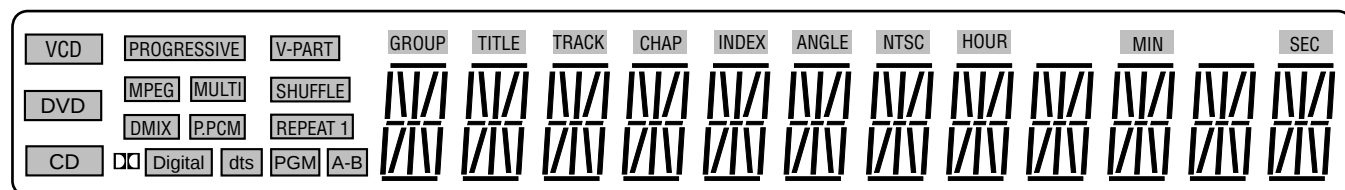
2-1. Self Check Mode Transition Processing

At the AC Power ON after IF CON (IC703) was reset, the input to 10pin (SELF CHECK) is judged and if “Low” is entered, the main unit transits to the Self Check mode. In this port input judgment, the result of 3-time attempts must be same (assuming that the MB-101 board is not connected). While pressing the [STOP] key on the main unit with the IF CON in STANDBY mode, enter [RETURN] → [DISPLAY] (or [SET UP]) on the remote commander, and the unit transits to the Self Check Mode. The Self Check mode terminates when the IF CON transits to the STANDBY mode.

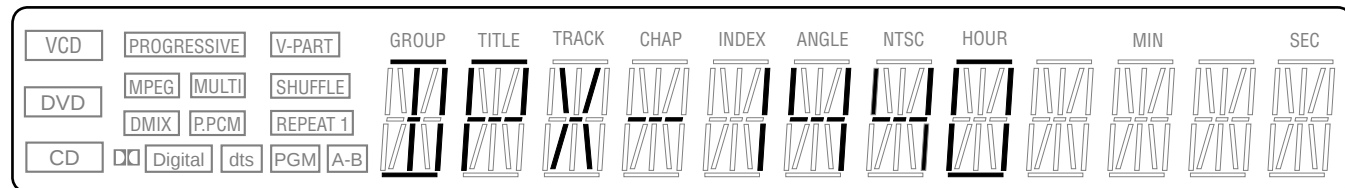
2-2. Operation of Auto Self Check

When the Self Check mode becomes active at the AC Power ON or by key input, the test display of the following steps (1) to (4) is repeated.

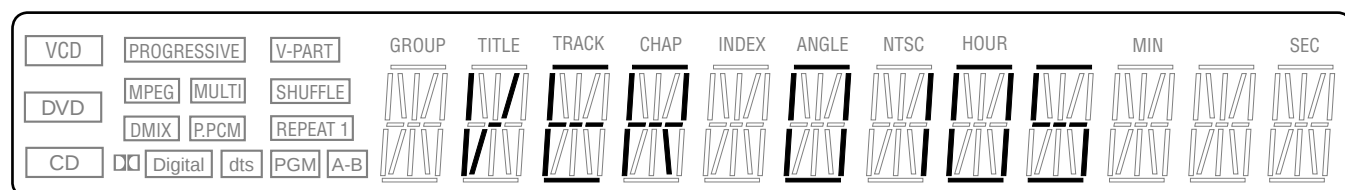
(1) FLD and LED all ON (for 5 seconds)



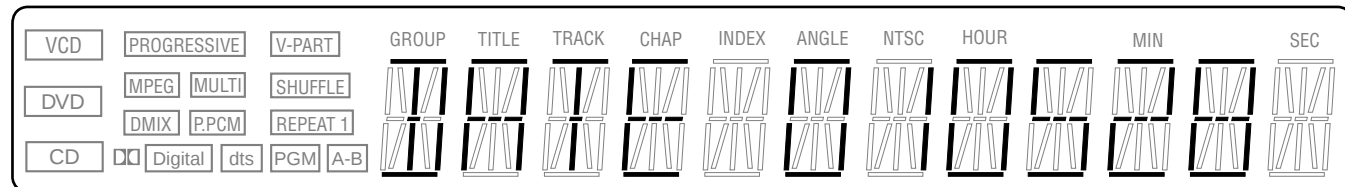
(2) MODEL display (for 2 seconds)



(3) Version display (for 2 seconds)



(4) ROM creation date display (for 2 seconds)



2-3. Each Self Check Function

Each Self Check function tests the FLD display, LED display, and key input.

Input Voltage [V]	IC703: Pin No. (Signal)				
	Pin ③ (AD1)	Pin ④ (AD4)	Pin ⑤ (AD5)	Pin ⑥ (AD6)	Pin ⑦ (CURSOR)
0	STOP	PLAY	OPEN/CLOSE	DISPLAY	ENTER
0.70	—	PAUSE	—	MENU	DOWN
1.31	—	PREVIOUS	—	RETURN	LEFT
1.97	—	NEXT	—	TOP MENU	UP
2.59	—	—	—	JOG	RIGHT
3.3	—	—	—	—	—

2-3-1. FLD and LED All ON

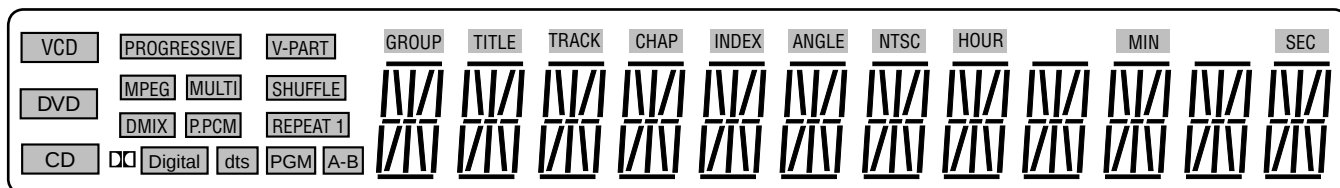
2-3-1-1. Transition Keys in Self Check Mode

- **STOP** key and **OPEN/CLOSE** key on the main unit
- **LEFT** key on the main unit and the remote commander

2-3-1-2. Operation and Display

In this mode, all LEDs except STANDBY LED and all segments of FLD turn ON.

Example of FLD all ON



2-3-2. Main Unit Key Name Display and Key Code Display

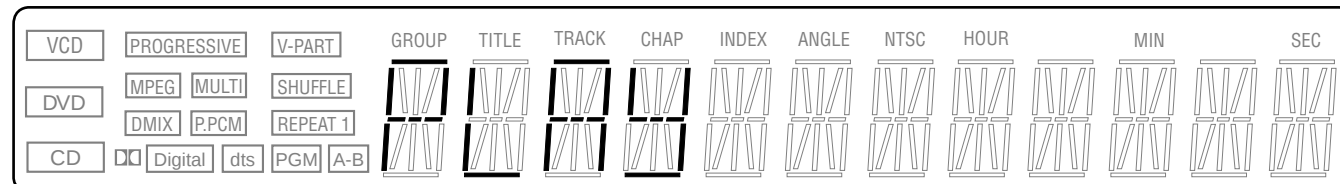
2-3-2-1. Transition Keys in Self Check Mode

- Keys on main unit except keys transitioned in self check

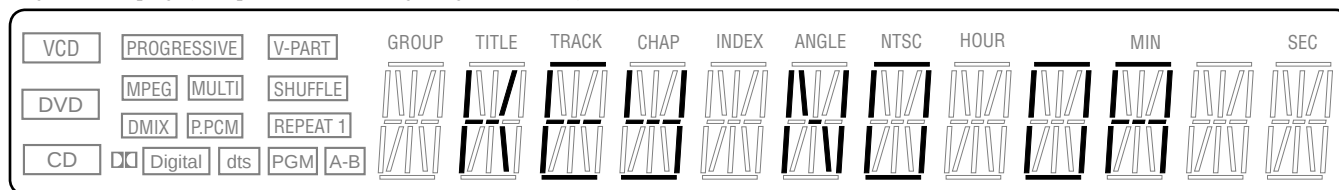
2-3-2-2. Operation and Display

When a key on the main unit is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the **DISPLAY** key on the remote commander. “NOTHING” is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

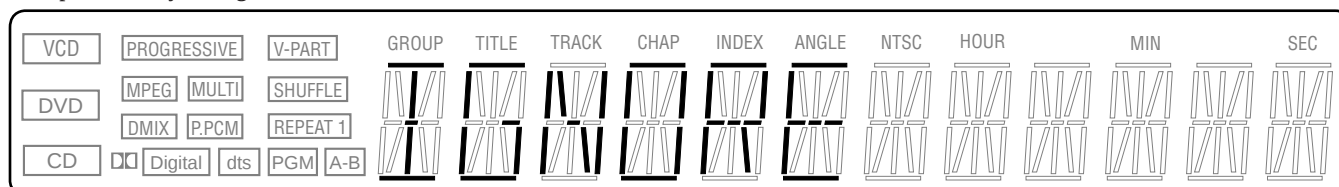
FLD display (at input of **PLAY** key on the main unit)



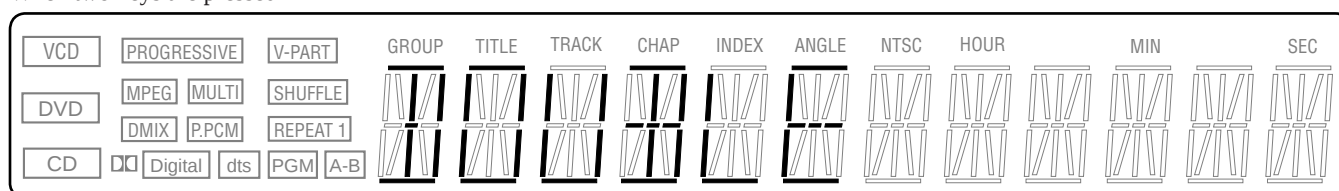
Key code display (at input of **PLAY** key, Key code: 0Ah)



At input of faulty voltage



When two keys are pressed



2-3-3. Remote Commander Key Name Display and Key Code Display

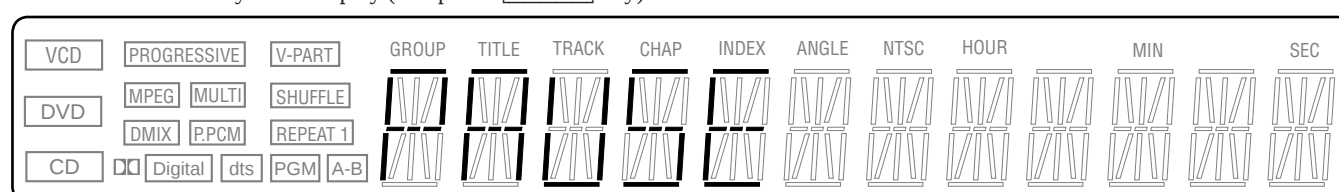
2-3-3-1. Transition Keys in Self Check Mode

- Remote commander keys except keys transited in self check

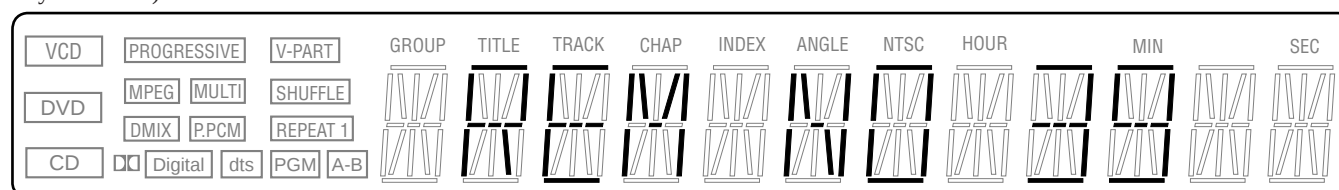
2-3-3-2. Operation and Display

When a key on the remote commander is pressed in the Self Check mode, the name of that key is displayed on the FLD. Also, the key name display and the key code display can be switched with the **DISPLAY** key on the remote commander. "NOTHING" is displayed when nothing is entered. Also, VIDEO CD, DVD, and CD segments turn on when a communication error occurred.

Remote commander key name display (at input of **PAUSE** key)



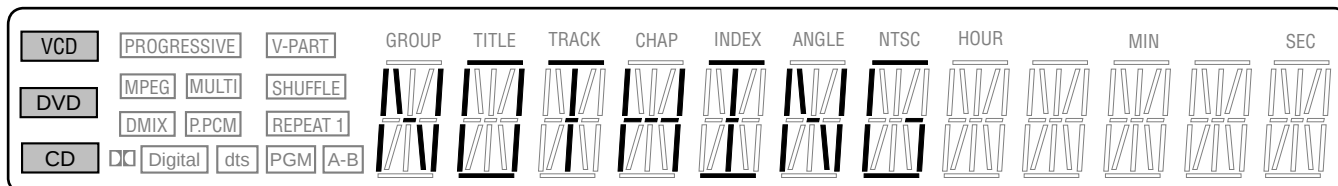
Remote commander key code display (at input of **PAUSE** key, Key code: 39h)



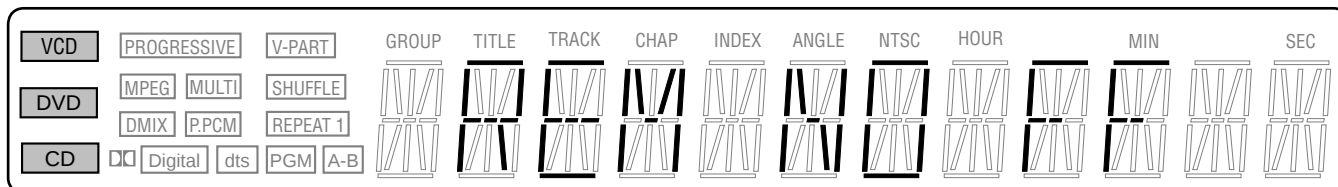
2-3-4. Communication Monitoring Display

The communication state is monitored and displayed while the key name on the main unit and the remote commander is displayed. When the communication to the System Controller failed, VIDEO CD, DVD, and CD segments turn on.

Communication error display (at no key input)



Communication error display (at code display without input of the remote commander)



2-3-5. FLD Anode Test Display and SHUTTLE Click Operation Test

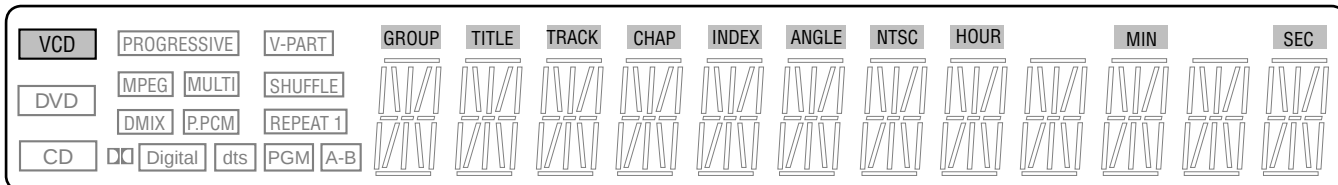
2-3-5-1. Transition Keys in Self Check Mode

- **[RIGHT]** on the main unit and the remote commander
- SHUTTLE on the remote commander during Anode Test display
(This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

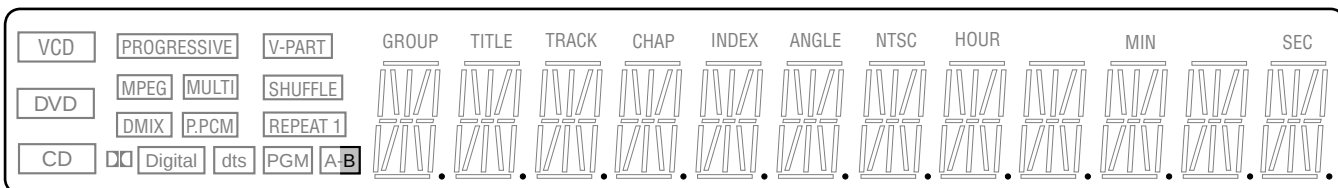
2-3-5-2. Operation and Display

The Self Check mode transits to this mode when **[RIGHT]** key is entered. Only the first segment of each grid of FLD turns on, and each time the SHUTTLE is entered, the segment of each grid is switched in order. When SHUTTLE input is clockwise, the segment switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each segment turns on individually.

Display at the start of Anode Test



↓ (Input in CW direction)



2-3-6. FLD Grid Test Display and SHUTTLE Click

Operation Test

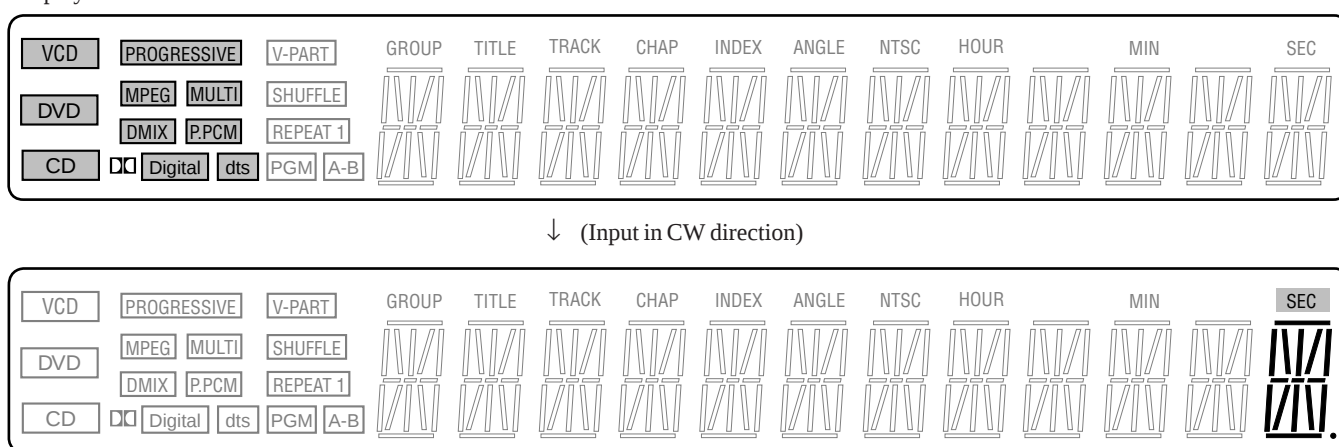
2-3-6-1. Transition Keys in Self Check Mode

- [UP] on the main unit and the remote commander
- SHUTTLE on the remote commander during Grid Test display
(This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-6-2. Operation and Display

The Self Check mode transits to this mode when [UP] key is entered. The first grid of FLD all turns on and other grids turn off. Each time the SHUTTLE is entered, the grid is switched in order. When SHUTTLE input is clockwise, the grid switches in 1 → 2 → 3 direction, or counterclockwise it switches in 3 → 2 → 1 direction. This tests whether each grid turns on individually.

Display at the start of Grid Test



2-3-7. LED Test Display

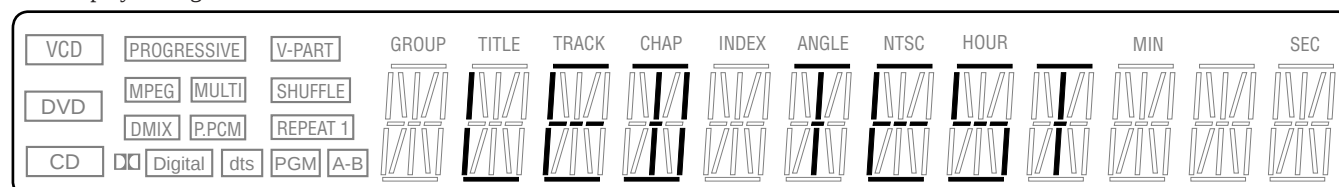
2-3-7-1. Transition Keys in Self Check Mode

- [DOWN] on the main unit and the remote commander
- SHUTTLE on the remote commander during LED Test display
(This model does not provide JOG/SHUTTLE, and therefore use another DVD remote commander having the JOG/SHUTTLE)

2-3-7-2. Operation and Display

LED is switched in order by the input of JOG/SHUTTLE. Also, LED ON/OFF is switched by the input of same key as the function that turns on the LED concerned.

FLD display during LED Test



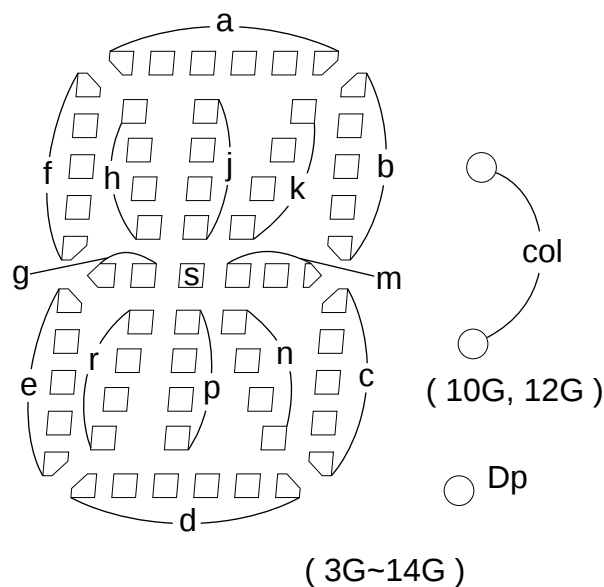
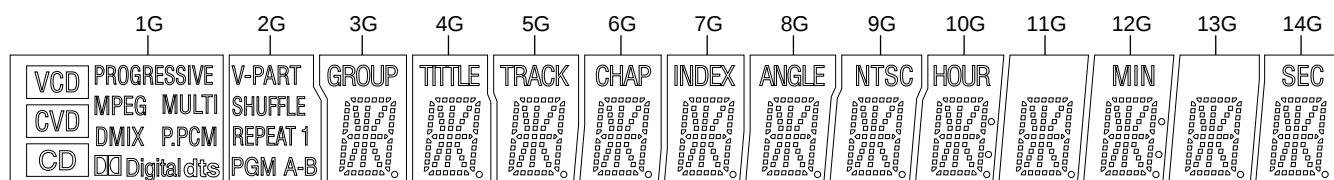
2-3-8. Beep Sound Test

2-3-8-1. Transition Keys in Self Check Mode

- Input of a key on main unit

2-3-8-2. Operation and Display

In the Self Check mode, each time a key on the main unit is entered, a beep sound of 1kHz (100ms) is generated.



ANODE CONNECTION

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G
P1	VCD	-	GROUP	TITLE	TRACK	CHAP	INDEX	ANGLE	NTSC	HOUR	-	MIN	-	SEC
P2	CVD	-	-	-	-	-	-	-	-	col	-	col	-	-
P3	CD	-	a	a	a	a	a	a	a	a	a	a	a	a
P4	PROGRESSIVE	-	h	h	h	h	h	h	h	h	h	h	h	h
P5	MPEG	-	j	j	j	j	j	j	j	j	j	j	j	j
P6	DMIX	-	k	k	k	k	k	k	k	k	k	k	k	k
P7	Digital	-	b	b	b	b	b	b	b	b	b	b	b	b
P8	-	V-PART	f	f	f	f	f	f	f	f	f	f	f	f
P9	MULTI	-	m	m	m	m	m	m	m	m	m	m	m	m
P10	P.	-	s	s	s	s	s	s	s	s	s	s	s	s
P11	PCM	-	g	g	g	g	g	g	g	g	g	g	g	g
P12	dts	-	c	c	c	c	c	c	c	c	c	c	c	c
P13	-	SHUFFLE	e	e	e	e	e	e	e	e	e	e	e	e
P14	-	REPEAT	r	r	r	r	r	r	r	r	r	r	r	r
P15	-	1	p	p	p	p	p	p	p	p	p	p	p	p
P16	-	PGM	n	n	n	n	n	n	n	n	n	n	n	n
P17	-	A-	d	d	d	d	d	d	d	d	d	d	d	d
P18	-	B	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp	Dp

6-11. TROUBLESHOOTING

6-11-1. Cannot Enter Test Mode

You cannot enter the Test mode when either button has been pressed by any reason with the board assembled in the front panel. In this state, the power does not turn on even under normal condition (the set is kept in standby state), and also no button is active and the remote commander is not accepted. In this case, disconnect the MB-101 board with the SELF CHECK (⑩ pin) of IF CON (IC404) on the FL-125 board kept in low state, supply AC, and the Test mode will be forcibly activated. Or, on the board, short the land printed as “SELF” to enter the Test mode. The IF CON (IC404) checks the SELF CHECK port only after the power on reset (only at AC supply, not in standby state). If any button is pressed, its name is displayed on the fluorescent display tube. But, if other than “NOTHING” is displayed though no button is pressed, it means that any button has been pressed.

6-11-2. Faults in Test Mode (MB-101 Board)

1. Test mode menu is not displayed

- Board visual check
Check main IC's, SYSTEM CONTROL (IC104), ROM (IC106 or IC107), AVD (IC502), and ARP&SERVO (IC302), for mounting condition, direction, or evidence of short between pins, or soldering failure. Also, compare with good board to check if there are missing capacitors or resistors.
- Clock signal check
Measure the clock frequency at CPUCK (⑦⑦ pin) of the SYSTEM CONTROL (IC104) using an oscilloscope.
If 33 MHz is outputted, an access to the ROM is normal, and then check the items in 1-2.
In the case of 8.25 MHz output, check the items in 1-1.
If it is fixed to “H” or “L”, the X101 or SYSTEM CONTROL (IC104) will be faulty.

1-1. CPUCK (33 MHz) is not outputted

- Power supply voltage check
Check the power connectors of the boards or power input pins of the IC's for voltage. Check the IC's in order of SYSTEM CONTROL (IC104), ROM (IC106 or 107), AVD (IC502), and ARP&SERVO (IC302). If correct voltage is not outputted, the power line will be shorted, or soldering or IC will be faulty.
- Reset signal check
Check that the XFRRST (⑦⑨ pin) of SYSTEM CONTROL (IC104) is “H” (3.3 V). If not “H”, a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC104) is doubtful.
- XRD, XWRH, and CS0X signals check
Using an oscilloscope, measure the XRD (⑦⑩ pin), XWRH (⑦⑪ pin), and CS0X (⑤⑨ pin) of the SYSTEM CONTROL (IC104) to check if they are fixed to “L” (0 V) or “H” (3.3 V), or if they are on the intermediate potential between “L” and “H”. If they are fixed to “L” or “H”, or on the intermediate potential, a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC104) is doubtful.
- HA [0 – 21] and HD [0 – 15] signals check
Using an oscilloscope, measure the HA [0 – 21] (⑩② – ⑩⑨, ⑪① – ⑪⑩, ⑪②, ① – ⑤ pins) and HD [0 – 15] (⑧⑤ – ⑩⑩ pins) of the SYSTEM CONTROL (IC104) to check if they are fixed to “L” (0 V) or “H” (3.3 V), or if HA is on the intermediate potential between “L” and “H” (HD is on intermediate potential in normal state), or if same waveform as that of adjacent pins is measured. In case of “L” or “H”, intermediate potential, or same waveform, a soldering failure of that line, a shot with other line, or faulty SYSTEM CONTROL (IC104) is doubtful.

1-2. CPUCK (33 MHz) is outputted (communication with ROM is normal)

- AVD (IC502) check
Using an oscilloscope, measure the SDCLKO (①④⑨ pin) of the AVD (IC502) to check that 95 MHz is outputted. If not outputted, a short of 27 MHz line across CLKI (①⑧⑩ pin) and SCLKIN (①⑧② pin), IC mounting failure, or faulty AVD (IC502) is doubtful. If 27 MHz is outputted, the communication between SYSTEM CONTROL (IC104) and AVD (IC502) is disabled, and therefore check the following items, particularly the AVD (IC502).
- WAIT signal check
Using an oscilloscope, measure the XWAIT (⑥⑦ pin) of the SYSTEM CONTROL (IC104) to check if it is fixed to “L” (0 V) or on the intermediate potential. In case of “L” or intermediate potential, examine CS2X – CS5X (⑥① – ⑥③ pins) to check if any pin is fixed to “L”.
For the CS2X and CS3X, AVD (IC502) mounting failure or faulty IC is doubtful.
For the CS4X and CS5X, ARP&SERVO (IC302) mounting failure or faulty IC is doubtful.
If CS2X – CS5X are not “L”, or they are sometimes on intermediate potential, a soldering failure of XWAIT line, a short with other line, or faulty SYSTEM CONTROL (IC104) is doubtful.
- INT signal check
Using an oscilloscope, measure the INT0 – 2, 4 – 6 (①⑥ – ①⑨ pins, ②① – ②② pins) of the SYSTEM CONTROL (IC103) to check if INT0 – 2, and 6 are fixed to “L” (0 V) and INT5 is fixed to “H” (3.3 V), or they are on intermediate potential. In case of “L”, “H”, or intermediate potential, a soldering failure of IC's connected to that line, a short with other line, faulty SYSTEM CONTROL (IC104), or faulty each IC is doubtful.
INT0 : AVD (IC502)
INT1, INT2 : ARP&SERVO (IC302)
INT5, INT6 : AUDIO DSP (IC601)
- CSnX signals check
Using an oscilloscope, measure the CX0X – CX7X (⑤⑨ – ⑥③, ⑥⑤, ⑥⑥ pins) of the SYSTEM CONTROL (IC104) to check if they are fixed to “L” (0 V), or two or more CS's sometime go “L”, or on intermediate potential. In case of fixed “L”, two or more CS's on “L” or intermediate potential, a soldering failure of IC's connected to that line, a short with other line, faulty SYSTEM CONTROL (IC104), or faulty each IC is doubtful.
CS0X : ROM (IC106 or IC107)
CS2X, CS3X : AVD (IC502)
CS4X, CS5X : ARP&SERVO (IC302)
- Other CS signals check
Using an oscilloscope, measure the VESCS/X38CS (⑧① pin) and XDACS (⑦⑨ pin) of the SYSTEM CONTROL (IC104) to check if they are fixed to “L”. If fixed, a soldering failure of that line, a short with other line, or faulty SYSTEM CONTROL (IC104) is doubtful.

If the above checking could not find a fault, check the outputted CS signal. If CS signal other than CS0X is outputted, a mounting failure of each IC or faulty IC that corresponds to active CS signal is doubtful.

CS2X, CS3X: AVD (IC502)
CS4X, CS5X: ARP&SERVO (IC302)

2. Test mode menu is displayed, but operation stops when a menu is selected

Using an oscilloscope, measure the PLCKO (⑨⑤ pin) of the ARP&SERVO (IC302) to check if it is fixed to “L” (0 V) or “H” (3.3 V). If fixed to “L” or “H”, the ARP&SERVO (IC302) is faulty. If not fixed, check the items in 1-2. in order.

3. Specific item failed in Diag All Check

A mounting failure of IC or faulty IC for that item is doubtful.
If “1901NG” is displayed, a loose connection of CN601, mounting failure of AUDIO DSP (IC601), or faulty IC is doubtful.

4. Picture and sound are not outputted

Check the CN601 & 501 for connection, and the flat cable for damage or loose connection.

5. Picture is outputted, but sound is not outputted

A mounting failure of AUDIO DSP (IC601) or AUDIO DAC (IC603, IC604), power supply failure, or faulty IC is doubtful.

6. Sound is outputted, but picture is not outputted

Using an oscilloscope, measure the (63), (66), (69), (74), (77), and (80) pins of AVD (IC502) to check if analog signals are outputted respectively. If not outputted, a soldering failure of that line, a short with other line, missing capacitor or resistor, or faulty AVD is doubtful.

6-11-3. Drive Auto Adjustment stops by an error

Faulty analog circuits of ARP&SERVO (IC302) or faulty peripheral circuits of DIGITAL SERVO (IC202) on the MB-101 board, faulty optical pickup, or loose connection of flat cable is doubtful.

6-11-4. Power is Supplied but Unstable

If Syscon Diagnosis completed successfully, basically the boards other than MB-101 board, connection, optical pickup, or mechanical deck will be faulty.

1. Red LED does not light when AC is supplied

Check if the specified voltage is outputted from the EVER –11 V ((3) pin), EVER +3.3 V ((11) pin), and EVER +11 V ((13) pin) of CN201 or CN920 in the power supply block. If not outputted, the power supply block will be faulty.

2. At [POWER] button ON, LED does not light in green even once, but kept in red (standby state)

Check if the specified voltage is outputted from the EVER –11 V ((3) pin), EVER +3.3 V ((11) pin), and EVER +11 V ((13) pin) of CN201 or CN920 in the power supply block. If not outputted, the power supply block will be faulty.

Check the P-CONT ((2) pin) of CN401 on the IF-84 board if it becomes “H”. If not “H”, a soldering failure of that line, a short with other line, missing capacitor or resistor, faulty AVD (IC502), loose connection between power supply block and IF-87 board, loose connection of connectors, faulty power supply block, or faulty IF-87 board is doubtful.

3. At [POWER] button ON, LED lights in green but returns to red (standby state) after several seconds (e.g. it returns to standby state after “SONY DVD” was displayed)

There is no regularity between faulty parts and timing when the set returns to the standby state).

Check if the specified voltage is outputted from the power supply block. If not outputted, the power supply block will be faulty.

Check the XFRRST ((7) pin) of CN101 on the MB-101 board if it is fixed to “L”, or the XIBUSY ((6) pin), XIFCS ((5) pin), SI0 ((4) pin), SO0 ((3) pin) and SC0 ((2) pin) of CN101 if they are fixed to “L” or “H”.

If fixed to “L” or “H”, a soldering failure of that line, a short with other line, missing capacitor or resistor, or faulty AVD (IC502) is doubtful.

If not fixed to “L” or “H”, loose connection between power supply block and IF-87 board or between IF-87 board and MB-101 board, loose connection of connectors, or faulty IF-87 board is doubtful.

4. At [POWER] button ON, LED lights in green but fluorescent display tube does not light

Loose connection between power supply block and IF-87 board, loose connection of connectors, or faulty IF-87 board is doubtful.

5. Picture and sound are not outputted

Loose connection between power supply block and IF-87 board or between IF-87 and VP-57/EV-14 board or between VP-57/EV-14 board and MB-101 board, loose connection of connectors, or faulty VP-57/EV-14 board is doubtful.

6. Picture is out outputted correctly

A mounting failure of BNR (IC601) on the MB-101 board, or faulty AVD (IC502) or ARP&SERVO (IC302), or faulty 27 MHz output (frequency, waveform) from 27-1OUT ((3), (4) pin) of PLL (IC103) is doubtful.

6-11-5. Power is not Supplied

1. Red LED does not light when AC is supplied

The power (EVER +3.3 V) is not supplied to the IF CON (IC703) on the FL-125 board.

The X701 does not oscillate.

2. At [POWER] button ON, LED is kept in red (standby state)

Any button has been pressed.

The voltage at PONCHK ((30) pin) of the IF CON (IC703) on the FL-125 board exceeds 0.5 V.

3. At [POWER] button ON, LED lights in green but returns to red (standby state) after several seconds

The PONCHK ((30) pin) of the IF CON (IC703) on the FL-125 board is abnormal (slow rising from 0.5 V to more than 1.5 V, or voltage not rising to more than 1.5 V).

The SYSTEM CONTROL (IC104) on the MB-101 board is faulty.

SECTION 7

ELECTRICAL ADJUSTMENT

In making adjustment, refer to 7-3. Adjustment Related Parts Arrangement.

Note: During diagnostic check, the characters and color bars can be seen only with the NTSC monitor. Therefore, for diagnostic check, use the monitor that supports both NTSC and PAL modes.

Use the reference disc for PAL for check, and use the reference disc for NTSC for adjustment.

This section describes procedures and instructions necessary for adjusting electrical circuits in this set.

Instruments required:

- 1) Color monitor TV
- 2) Oscilloscope 1 or 2 phenomena, band width over 100 MHz, with delay mode
- 3) Frequency counter (over 8 digits)
- 4) Digital voltmeter
- 5) Standard commander (RMT-D139P/D140A/D140E/D140P)
- 6) DVD reference disc
 - HLX-501 (J-6090-071-A) (dual layer) (NTSC)
 - HLX-503 (J-6090-069-A) (single layer) (NTSC)
 - HLX-504 (J-6090-088-A) (single layer) (NTSC)
 - HLX-505 (J-6090-089-A) (dual layer) (NTSC)
 - HLX-506 (J-6090-077-A) (single layer) (PAL)
 - HLX-507 (J-6090-078-A) (dual layer) (PAL)
- 7) SACD reference disc
 - HLXA-509 (J-6090-090-A)
- 8) Extension Cable (J-6090-109-A)

Abbreviation:

RUS : Russian

7-1. POWER SUPPLY CHECK

1. HS15S1E/HS15S1U Boards

Mode	E-E
Instrument	Digital voltmeter
EVER +3.3 V Check	
Test point	CN201 pin ⑪
Specification	3.5 ± 0.2 Vdc
SW +3.3 V Check	
Test point	CN201 pin ⑧
Specification	3.3 ± 0.2 Vdc
+5 V Check	
Test point	CN201 pin ⑫
Specification	5.0 ± 0.3 Vdc
SW +11 V Check	
Test point	CN201 pin ⑥, ⑦
Specification	$11.5^{+1.0}_{-1.5}$ Vdc
EVER +11 V Check	
Test point	CN201 pin ⑬
Specification	11.0 ± 1.0 Vdc
EVER -11 V Check	
Test point	CN201 pin ③
Specification	-11.0 ± 1.0 Vdc

Checking method:

- 1) Confirm that each voltage satisfies the specification.

7-2. ADJUSTMENT OF VIDEO SYSTEM

1. Video Level Adjustment (MB-101 BOARD)

<Purpose>

This adjustment is made to satisfy the NTSC/PAL standard, and if not adjusted correctly, the brightness will be too large or small.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	LINE OUT (VIDEO) connector (75 Ω terminated)
Instrument	Oscilloscope
Adjusting element	RV501
Specification	$1.00^{+0.04}_{-0.02}$ Vp-p

Adjusting method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Adjust the RV501 to attain $1.00^{+0.04}_{-0.02}$ Vp-p.



Figure 7-1

2. Checking S Video Output S-Y

<Purpose>

Check S-terminal video output. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with a S-terminal cable.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.00 ± 0.05 Vp-p

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the S-Y level is 1.00 ± 0.05 Vp-p.



Figure 7-2

3. Checking S Video Output S-C

<Purpose>

This checks whether the S-C satisfies the NTSC/PAL Standard. If it is not correct, the colors will be too dark or light.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	S VIDEO OUT (S-C) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	A = 286 ± 30 mVp-p (NTSC) A = 300 ± 100 mVp-p (PAL)

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the S-C burst is "A".

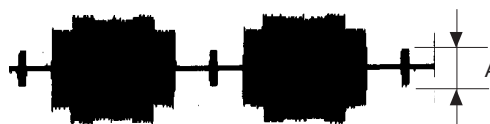


Figure 7-3

4. Checking Component Video Output Y (Except AEP, UK, RUS Model)

<Purpose>

This checks component video output Y. If it is incorrect, correct brightness will not be attained when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (Y) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	1.00 ± 0.05 Vp-p

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the Y level is 1.00 ± 0.05 Vp-p.



Figure 7-4

5. Checking Component Video Output B-Y (Except AEP, UK, RUS Model)

<Purpose>

This checks component video output B-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P _B) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 $\pm$ 50 mVp-p

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the B-Y level is 700 $\pm$ 50 mVp-p.

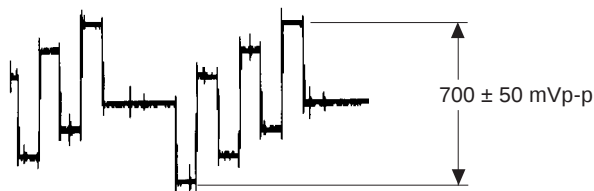


Figure 7-5

6. Checking Component Video Output R-Y (Except AEP, UK, RUS Model)

<Purpose>

This checks component video output R-Y. If it is incorrect, correct colors will not be displayed when connected to, for instance, projector.

Mode	Video level adjustment in test mode
Signal	Color bars
Test point	COMPONENT VIDEO OUT (P _R) connector (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 $\pm$ 50 mVp-p

Checking method:

- 1) In the test mode initial menu "6" Video Level Adjustment, set so that color bars are generated.
- 2) Confirm that the R-Y level is 700 $\pm$ 50 mVp-p.

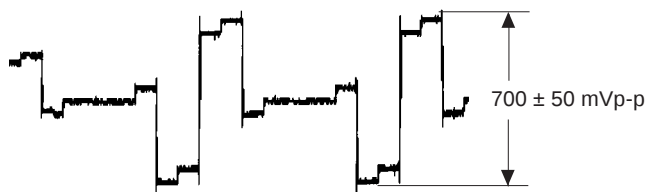


Figure 7-6

7. Checking RGB Output R (AEP, UK, RUS Model)

<Purpose>

This checks RGB output R. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push [0] for Syscon Diagnosis and push [7] for Video and push [5] for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑮ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 $\pm$ 50 mVp-p

Checking method:

- 1) Confirm that the R level is 700 $\pm$ 50 mVp-p.

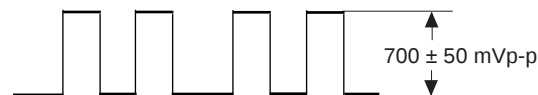


Figure 7-7

8. Checking RGB Output G (AEP, UK, RUS Model)

<Purpose>

This checks RGB output G. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push [0] for Syscon Diagnosis and push [7] for Video and push [5] for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑮ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 $\pm$ 50 mVp-p

Checking method:

- 1) Confirm that the G level is 700 $\pm$ 50 mVp-p.

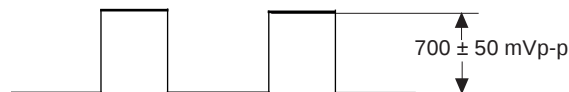


Figure 7-8

9. Checking RGB Output B (AEP, UK, RUS Model)

<Purpose>

This checks RGB output B. If it is incorrect, pictures will not be displayed correctly in spite of connection to the TV with an EURO AV connecting cord.

Mode	In test mode, Push [0] for Syscon Diagnosis and push [7] for Video and push [5] for RGB out
Signal	Color bars
Test point	LINE 1 (RGB)-TV connector pin ⑦ (75 Ω terminated)
Instrument	Oscilloscope
Specification	700 $\pm$ 50 mVp-p

Checking method:

- 1) Confirm that the B level is 700 $\pm$ 50 mVp-p.

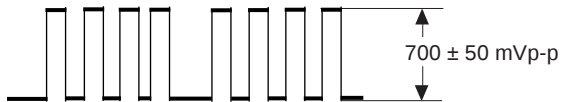


Figure 7-9