SERVICE MANUAL

MODEL : MCV903-A0U(MCS903F,MCS903S,MCS903W,MCS903AW)

LG

Internal Use Only

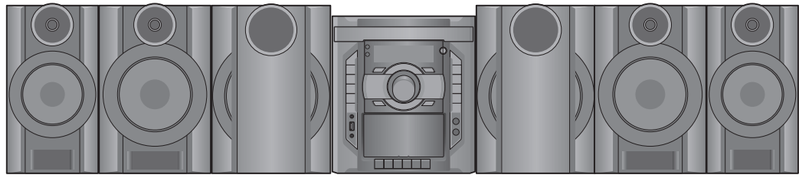
Website http://biz.lgservice.com

MINI Hi-Fi SYSTEM

SERVICE MANUAL

CAUTION

BEFORE SERVICING THE UNIT, READ THE “SAFETY PRECAUTIONS” IN THIS MANUAL.



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[CONTENTS]

SECTION 1. GENERAL

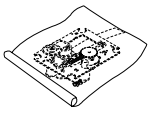
❑ SERVICING PRECAUTIONS

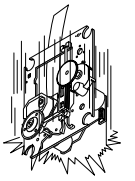
NOTES REGARDING HANDLING OF THE PICK-UP

1. Notes for transport and storage

1) The pick-up should always be left in its conductive bag until immediately prior to use.
2) The pick-up should never be subjected to external pressure or impact.

Storage in conductive bag

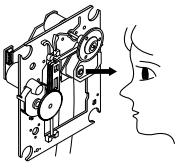




Drop impact

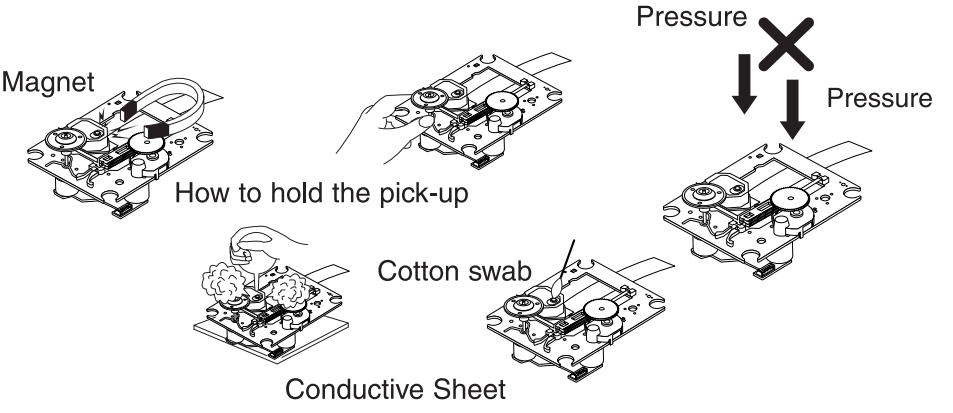
2. Repair notes

1) The pick-up incorporates a strong magnet, and so should never be brought close to magnetic materials.
2) The pick-up should always be handled correctly and carefully, taking care to avoid external pressure and impact. If it is subjected to strong pressure or impact, the result may be an operational malfunction and/or damage to the printed-circuit board.
3) Each and every pick-up is already individually adjusted to a high degree of precision, and for that reason the adjustment point and installation screws should absolutely never be touched.
4) Laser beams may damage the eyes!
   Absolutely never permit laser beams to enter the eyes!
   Also NEVER switch ON the power to the laser output part (lens, etc.) of the pick-up if it is damaged.



NEVER look directly at the laser beam, and don't let contact fingers or other exposed skin.

5) Cleaning the lens surface
   If there is dust on the lens surface, the dust should be cleaned away by using an air bush (such as used for camera lens). The lens is held by a delicate spring. When cleaning the lens surface, therefore, a cotton swab should be used, taking care not to distort this.



6) Never attempt to disassemble the pick-up.
   Spring by excess pressure. If the lens is extremely dirty, apply isopropyl alcohol to the cotton swab. (Do not use any other liquid cleaners, because they will damage the lens.) Take care not to use too much of this alcohol on the swab, and do not allow the alcohol to get inside the pick-up.

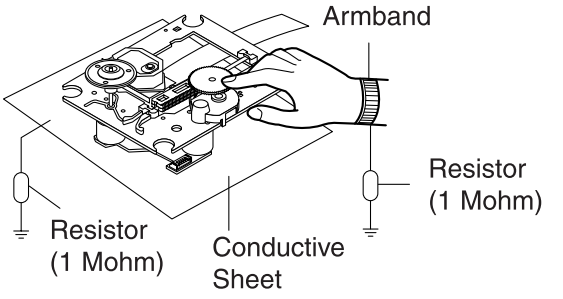
NOTES REGARDING COMPACT DISC PLAYER REPAIRS

1. Preparations

1) Compact disc players incorporate a great many ICs as well as the pick-up (laser diode). These components are sensitive to, and easily affected by, static electricity. If such static electricity is high voltage, components can be damaged, and for that reason components should be handled with care.
2) The pick-up is composed of many optical components and other high-precision components. Care must be taken, therefore, to avoid repair or storage where the temperature of humidity is high, where strong magnetism is present, or where there is excessive dust.

2. Notes for repair

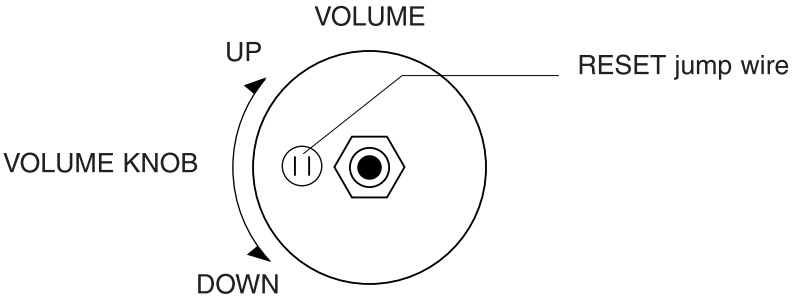
1) Before replacing a component part, first disconnect the power supply lead wire from the unit
2) All equipment, measuring instruments and tools must be grounded.
3) The workbench should be covered with a conductive sheet and grounded.
   When removing the laser pick-up from its conductive bag, do not place the pick-up on the bag. (This is because there is the possibility of damage by static electricity.)
4) To prevent AC leakage, the metal part of the soldering iron should be grounded.
5) Workers should be grounded by an armband (1MΩ)
6) Care should be taken not to permit the laser pick-up to come in contact with clothing, in order to prevent static electricity changes in the clothing to escape from the armband.
7) The laser beam from the pick-up should NEVER be directly facing the eyes or bare skin.



CLEARING MALFUNCTION

You can reset your unit to initial status if malfunction occur(button malfunction, display, etc.).
Using a pointed good conductor(such as driver), simply short the RESET jump wire on the inside of the volume knob for more than 3 seconds.
If you reset your unit, you must reenter all its settings(stations, clock, timer)

NOTE: 1. To operate the RESET jump wire, pull the volume rotary knob and release it.
2. If you wish to operate the RESET jump wire, it is necessary to unplug the power cord.



❑ ESD PRECAUTIONS

Electrostatically Sensitive Devices (ESD)

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ESD devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ESD devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESD devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESD devices.
6. Do not remove a replacement ESD device from its protective package until immediately before you are ready to install it. (Most replacement ESD devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive materials).
7. Immediately before removing the protective material from the leads of a replacement ESD device, touch the protective material to the chassis or circuit assembly into which the device will by installed.

CAUTION : BE SURE NO POWER IS APPLIED TO THE CHASSIS OR CIRCUIT, AND OBSERVE ALL OTHER SAFETY PRECAUTIONS.

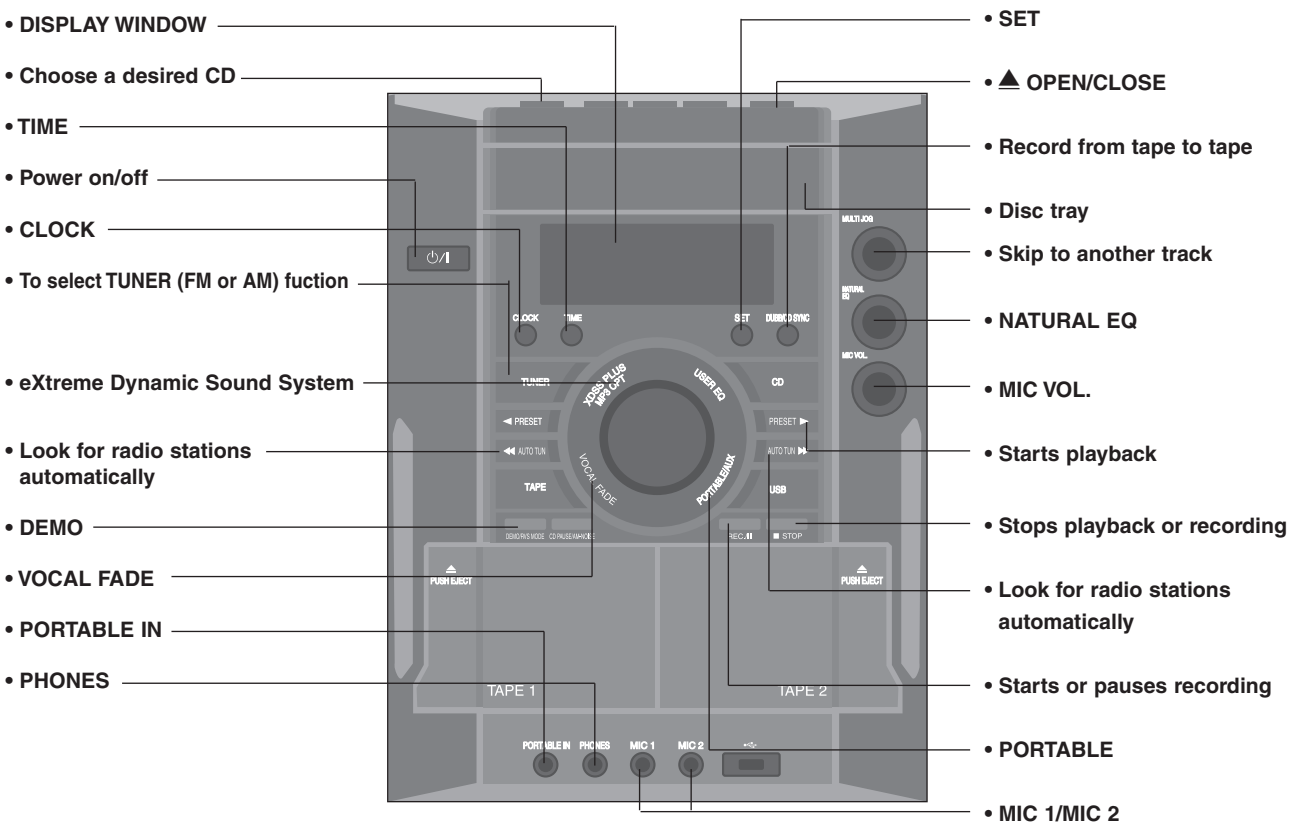
8. Minimize bodily motions when handing unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

CAUTION. GRAPHIC SYMBOLS

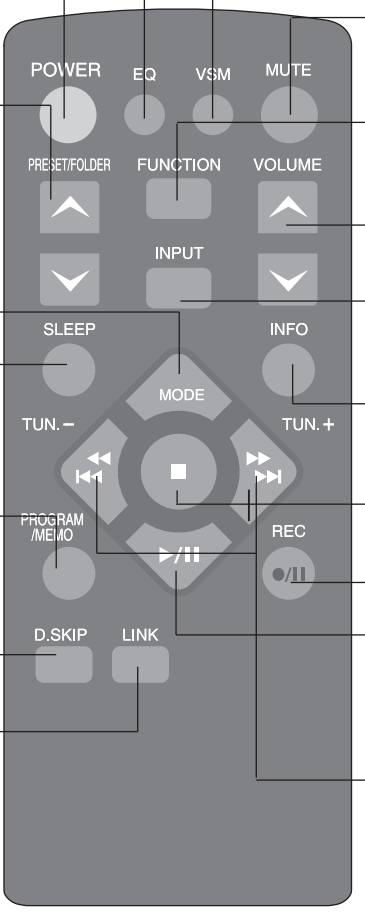
	THE LIGHTNING FLASH WITH APROWHEAD SYMBOL. WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED “DANGEROUS VOLTAGE” THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.
	THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

❑ LOCATION OF USERS CONTROLS

FRONT / BACK PANEL



REMOTE CONTROL



- **NATURAL EQ**
  You can choose sound impressions.

- **Power on/off**
  Power save mode
  Press **POWER** for longer than 3 seconds as the device is powered on, you can move into power save mode.

- **Search for a folder of MP3/WMA files**
  When a CD containing MP3/WMA files in several fold-ers is being played, press **PRESET/FOLDER** to select the folder you want to play.
  Choose a 'preset number' for a radio station
  (see Listening to the radio)

- **Listen to your tracks again and again**

- **Fall asleep while listening to your player**
  Press **SLEEP** one or more times to select delay time between 10 and 180 minutes, after the player will turn off.
  Dimm the display light

- **For storing radio stations**
  (see Listening to the radio)
  Listen to your tracks in any order
  (see Listening to the CDs)

- **Choose a desired CD**
  (see Listening to CDs)

- **Selecting the sound system**
  You can enjoy different sounds by selecting the sound mode you want. Press **LINK** repeatedly, the display changes in the following order, LINK ON→SURROUND 1→SURROUND 2.

- **VSM (Virtual Sound Matrix)**
  You can select the Virtual sound.

- **Temporarily stop the sound**
  Press the button again to return to the sound.

- **To change the functions**
  Change the functions among FM, AM, CD, TAPE.

- Control the volume when using any function.

- **To change the INPUT functions**
  Change the functions among USB, PORTABLE, AUX.

- **See information about your music**
  MP3/WMA files often come with tags. The tag gives the Title, Artist, Album or Time information.

- **Stops playback or recording**

- **Starts or pauses recording**

- **Starts or pauses playback**
  Improve poor FM reception
  This will change the tuner from stereo to mono and usually improve the reception

- **Select the radio station**
  Search for a section within a track
  Play Fast backward or Forward

.

❑ SPECIFICATIONS

General

Power supply	Refer to main label.
Power consumption	Refer to main label.
Net Weight	8.45 kg
External dimensions (W x H x D)	170 x 240 x 260 mm
Operating temperature	5ºC to 35ºC
Operating humidity	5% to 85 %

Tuner

FM Tuning Range	87.5 - 108.0 MHz or 65.0 - 74.0 MHz, 87.5 - 108.0 MHz
AM Tuning Range	522 - 1,620 kHz or 520 - 1,720 kHz

Amplifier

OUTPUT POWER	Front : 280 W + 280 W, Surround : 140 W + 140 W, Sub Woofer : 180 W + 180 W
T.H.D	10 %
Frequency Response	40 - 20000Hz
Signal-to-noise ratio	75dB

CD player

Frequency response	42 - 20000 Hz
Signal- to- noise ratio	75 dB
Dynamic range	80dB

Cassette tape player

F.F/REW Time	120 sec (C-60)
Frequency Response	250 - 8000 Hz
Signal to Noise Ratio	43 dB
Channel Separation	45 dB (P/B)/45 dB (R/P)
Erase Ratio	50 dB (MTT-5511)

Speakers

	MCS903S	MCS903F	MCS903AW/MCS903W
Type	Bass Reflex 2Way 2 Speaker	Bass Reflex 2Way 2 Speaker	Bass Reflex 1 Way 1 Speaker
Impedance	16 Ω	8 Ω	12 Ω
Frequency Response	70 - 20000 Hz	55 - 20000 Hz	50 - 1500 Hz
Sound Pressure Level Rated	83 dB/W (1m)	86 dB/W (1m)	85 dB/W (1m)
Input Power	140 W	280 W	180 W
Max. Input Power	280 W	560 W	360 W
Net Dimensions	205 x 432 x 286 mm	270 x 432 x 326 mm	315 x 432 x 356 mm
Net Weight (1EA)	4.4 kg	8.3 kg	9.8 kg

Designs and specifications are subject to change without pior notice.

❑ USB DOWNLOAD GUIDE

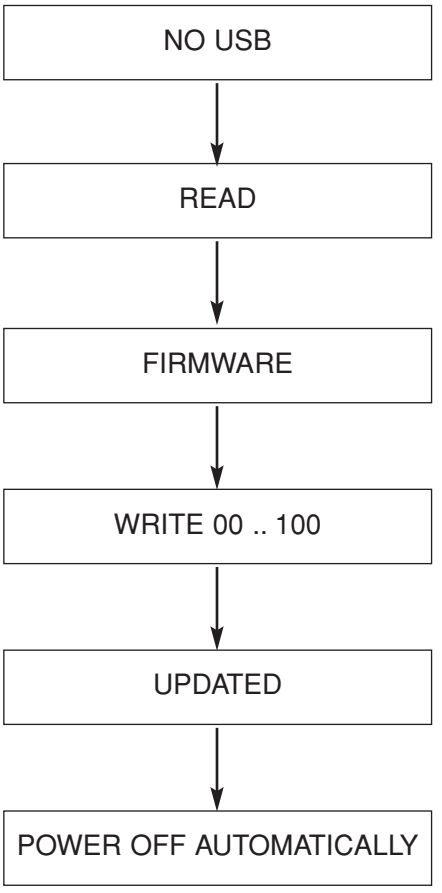
1. AUDIO USB DOWNLOAD GUIDE

Download program file name must be MCV903.HEX.mcs.

→ If security program (Water Wall) is activated on your PC, you must save the file to the USB storage device and disable the security software then download the file to your set.

Caution: When downloading the file, you should neither unplug the USB device, change to the other function, nor power off the device. USB device must be unplugged when the downloading process is completed.

ON VFD DISPLAY SCREEN



1. INSERT USB DEVICE AT USB FUNCTION

2. WHEN COMPLETED, REMOVE USB DEVICE.

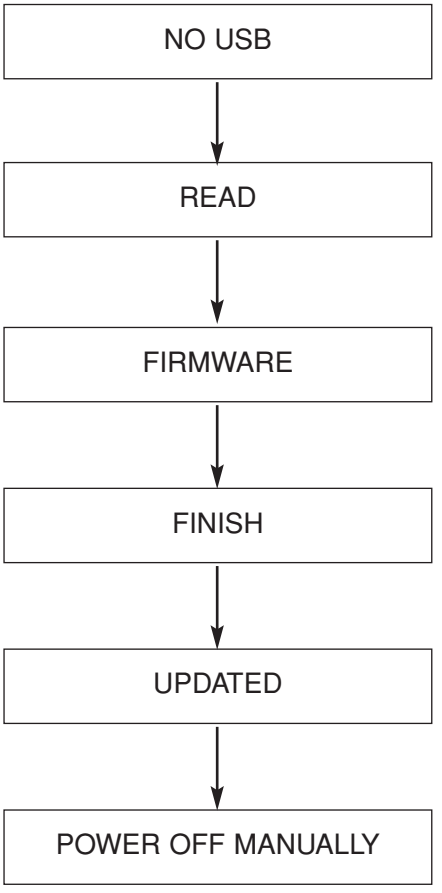
2. CD USB DOWNLOAD GUIDE

Download program file name must be LGBOX_HA8M.mcs.

→ If security program (Water Wall) is activated on your PC, you must save the file to the USB storage device and disable the security software then download the file to your set.

Caution: When downloading the file, you should neither unplug the USB device, change to the other function, nor power off the device. USB device must be unplugged when the downloading process is completed.

ON VFD DISPLAY SCREEN



1. INSERT USB DEVICE AT USB FUNCTION

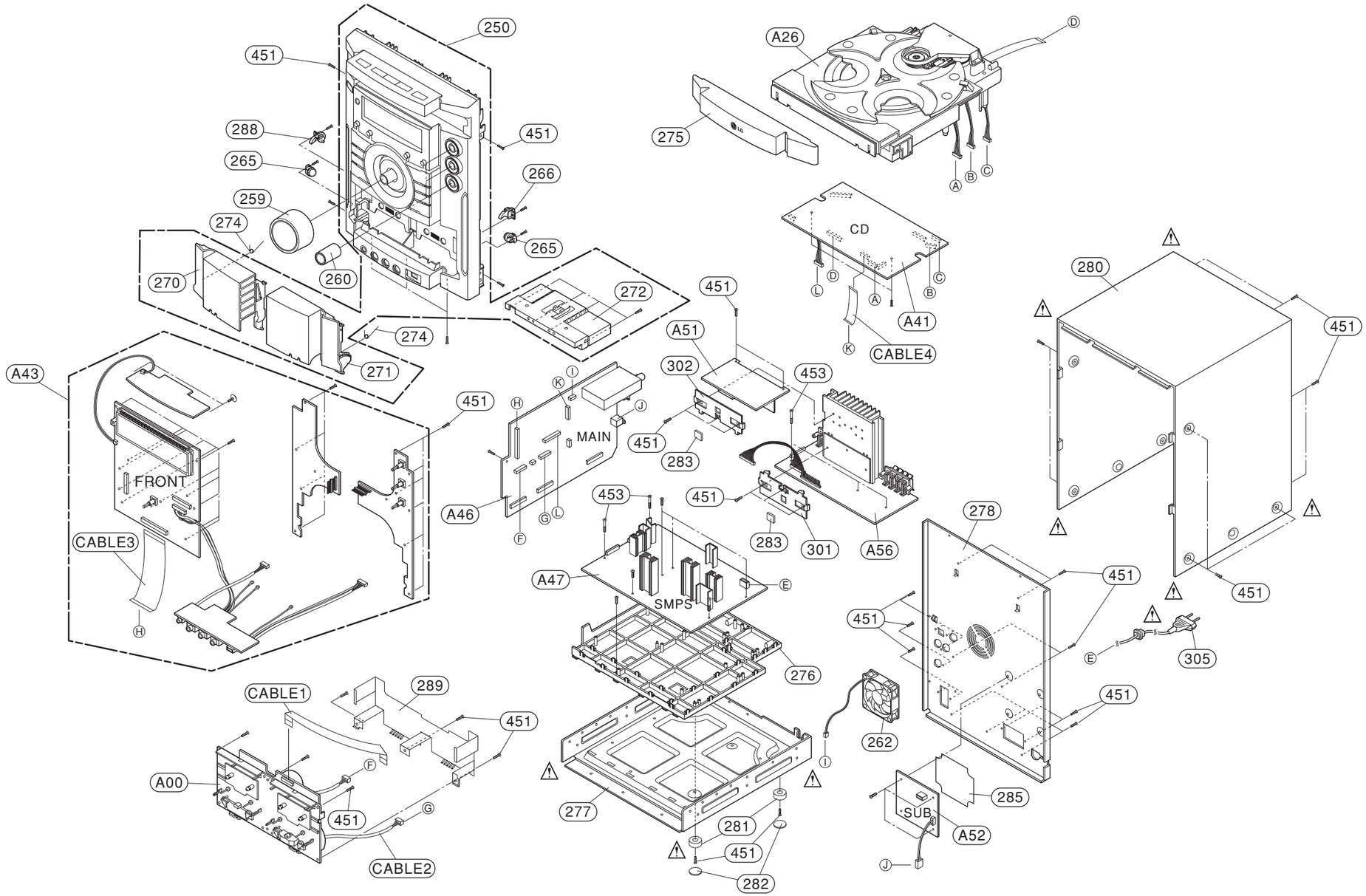
2. WHEN COMPLETED, REMOVE USB DEVICE.

MEMO

SECTION 2. EXPLODED VIEWS

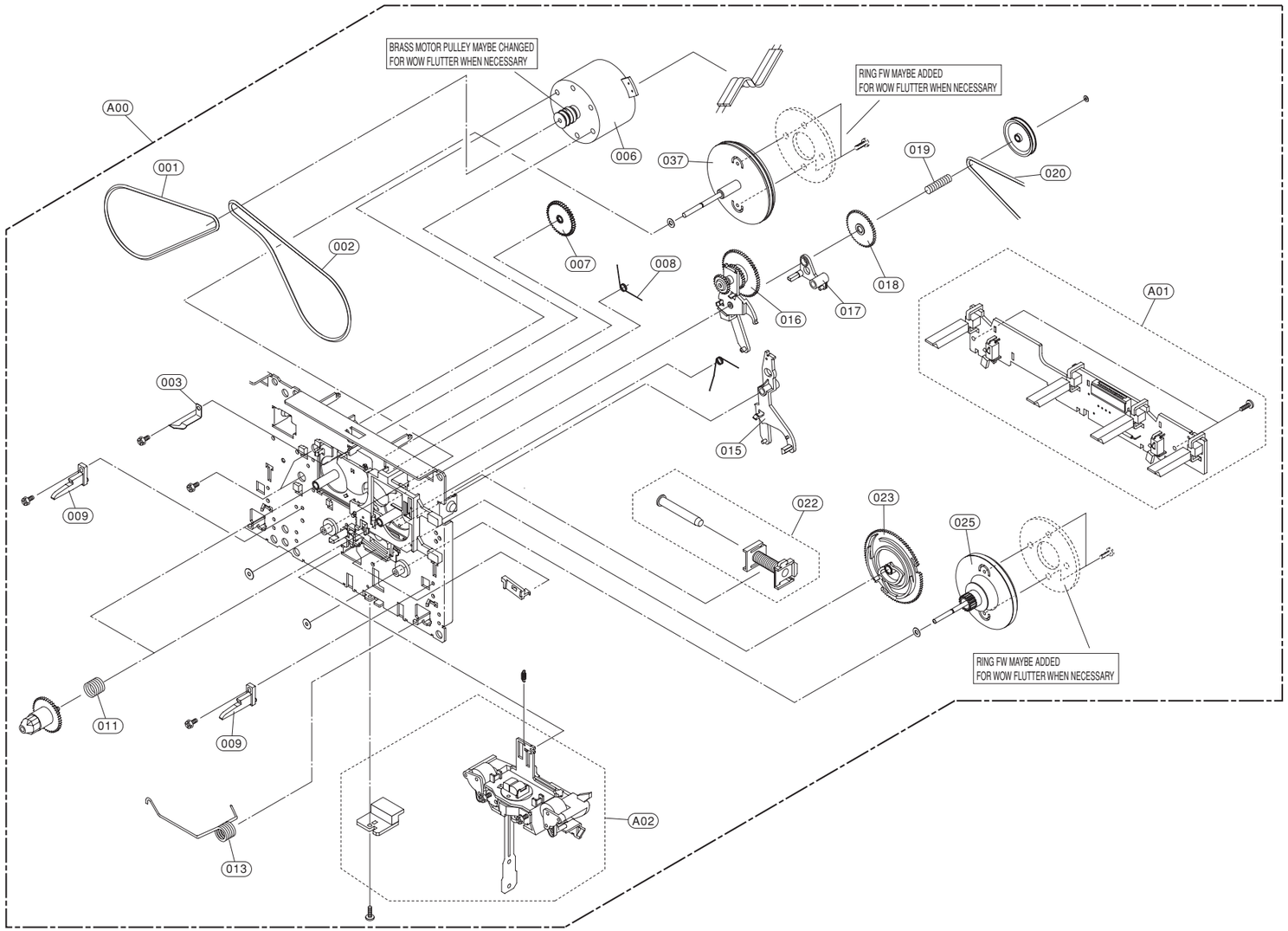
1. CABINET AND MAIN FRAME SECTION

NOTES) THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

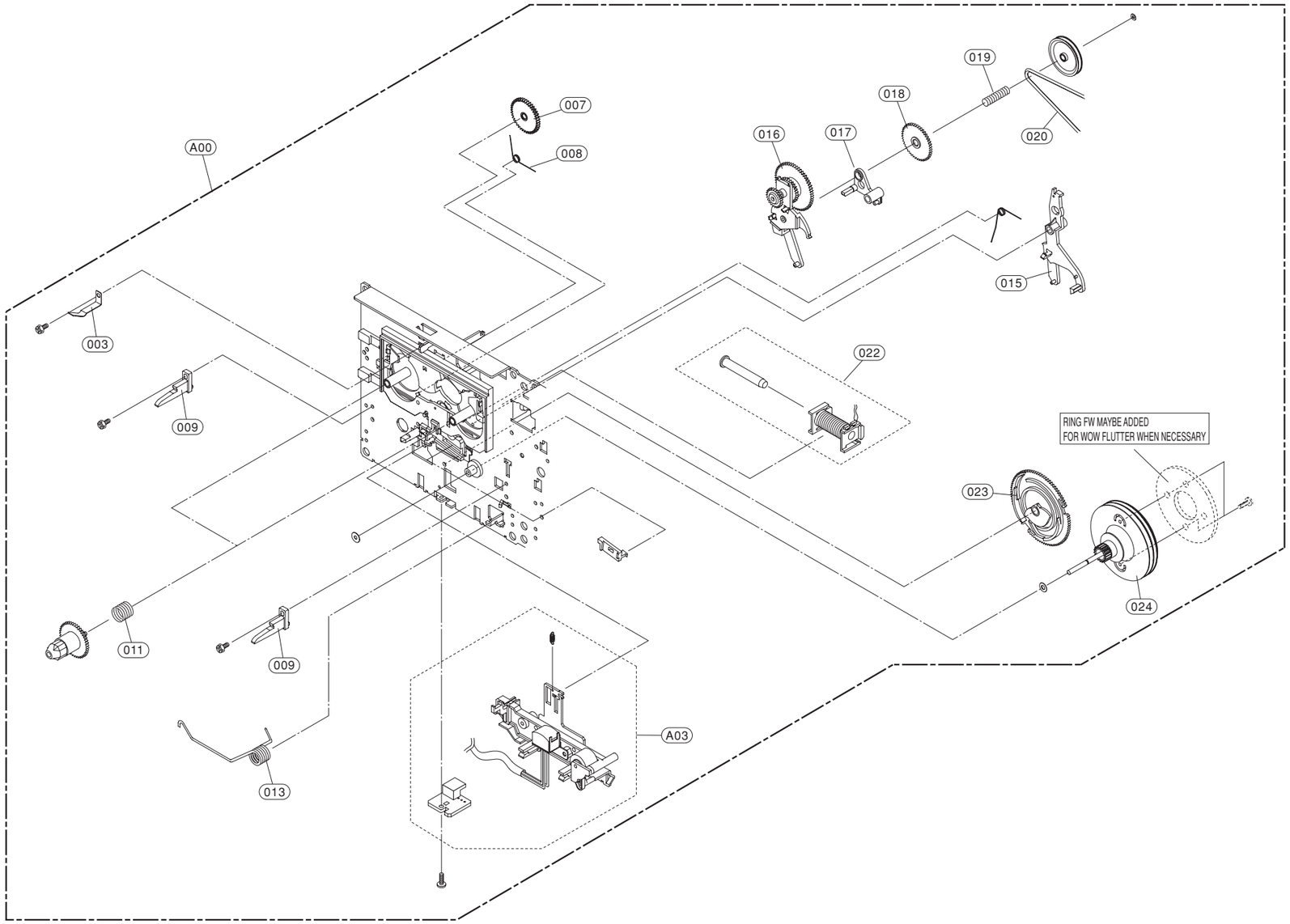


TAPE DECK MECHANISM EXPLODED VIEW

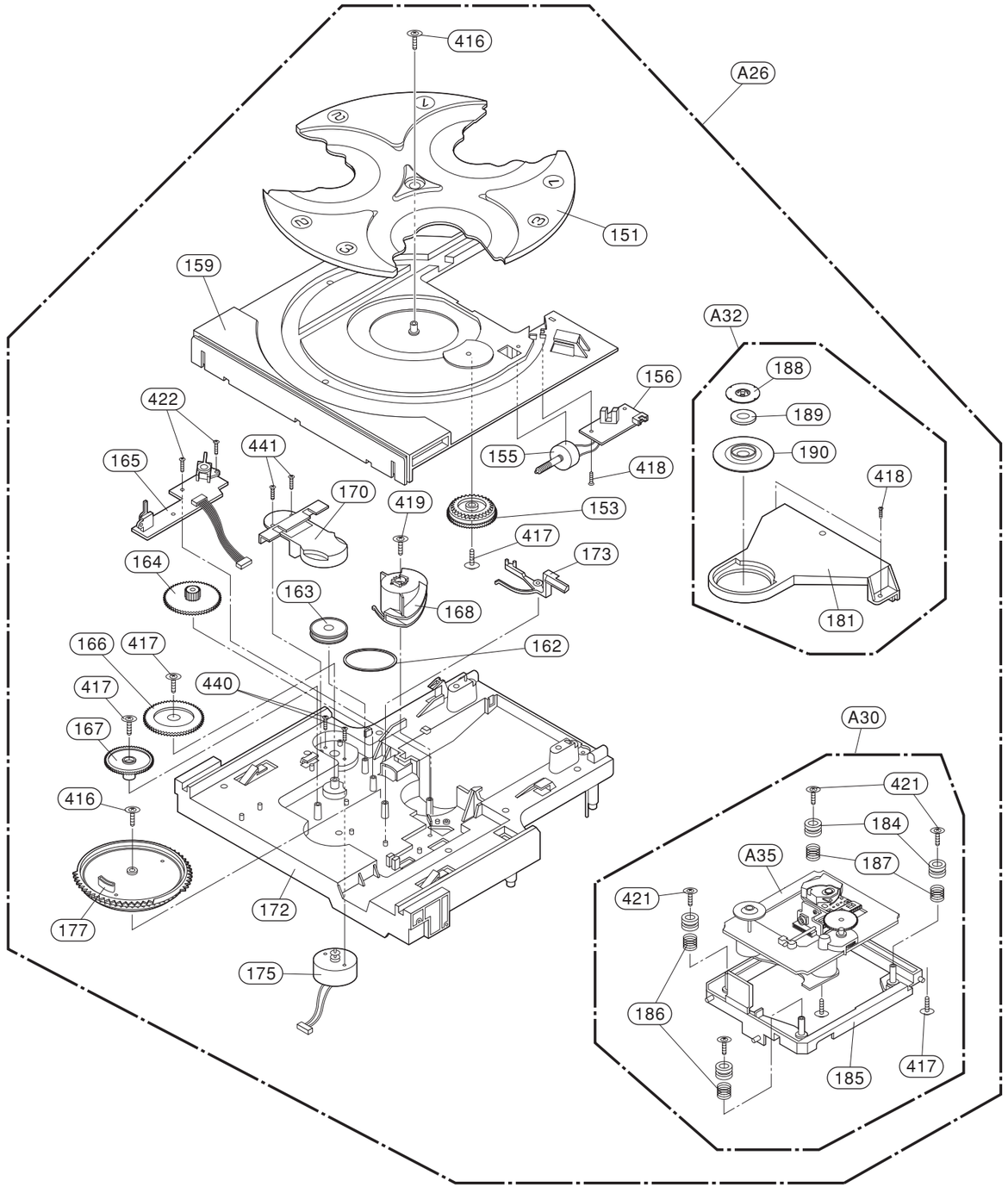
1. TAPE DECK MECHANISM (A/R & A/S : RIGHT A/R DECK)



2. TAPE DECK MECHANISM (A/R & A/S : LEFT A/S DECK)

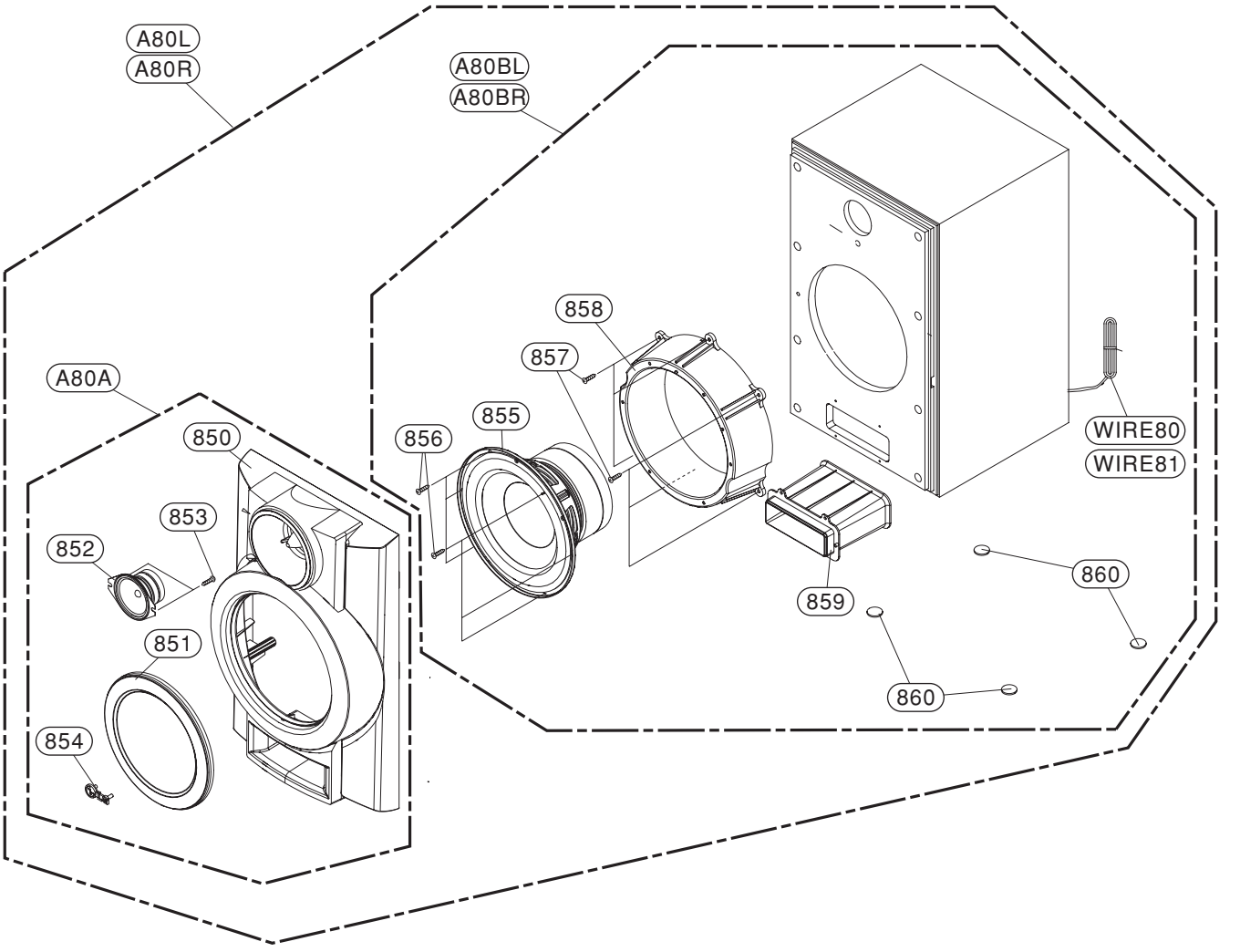


CD MECHANISM EXPLODED VIEW

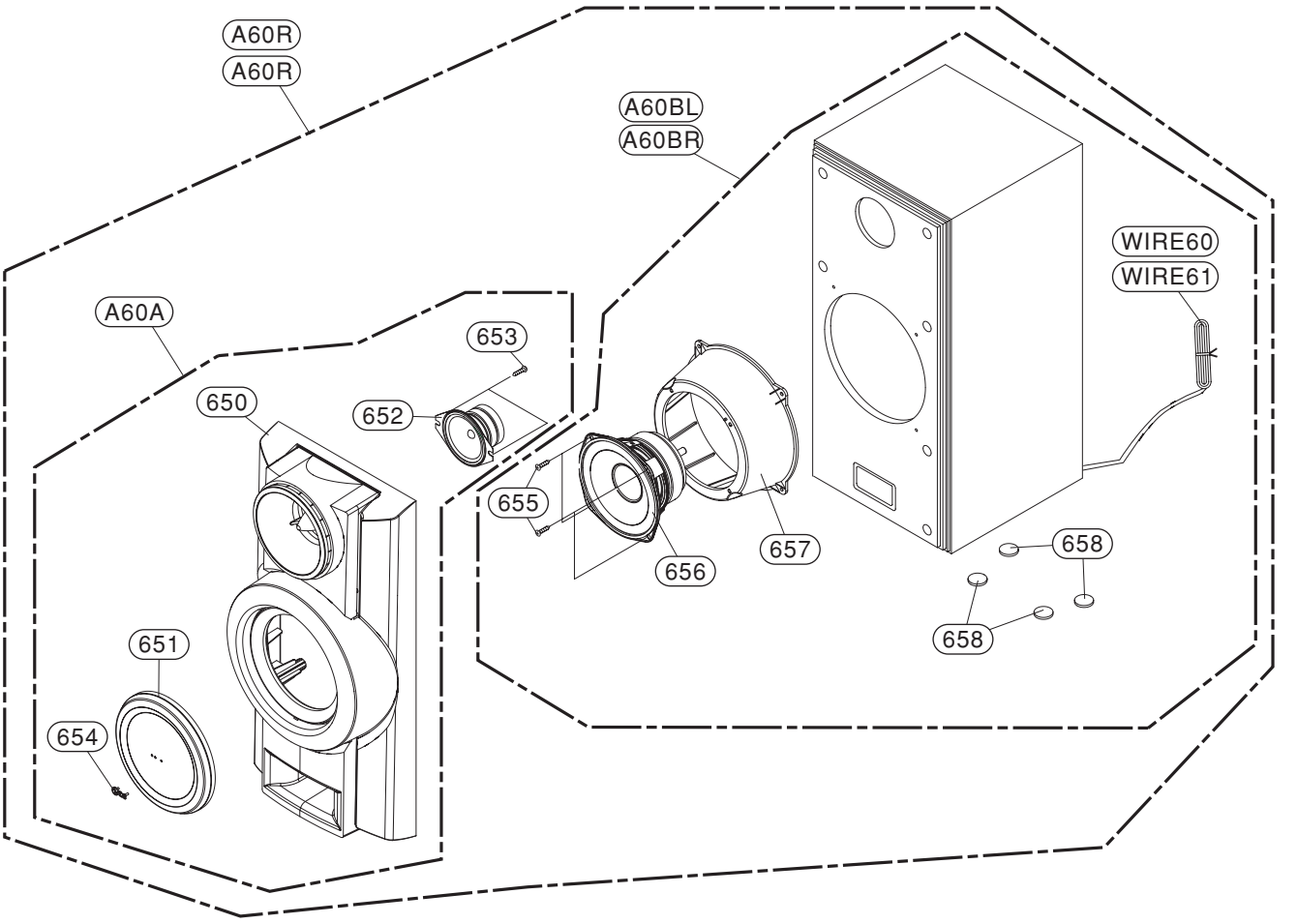


❑ SPEAKER EXPLODED VIEW

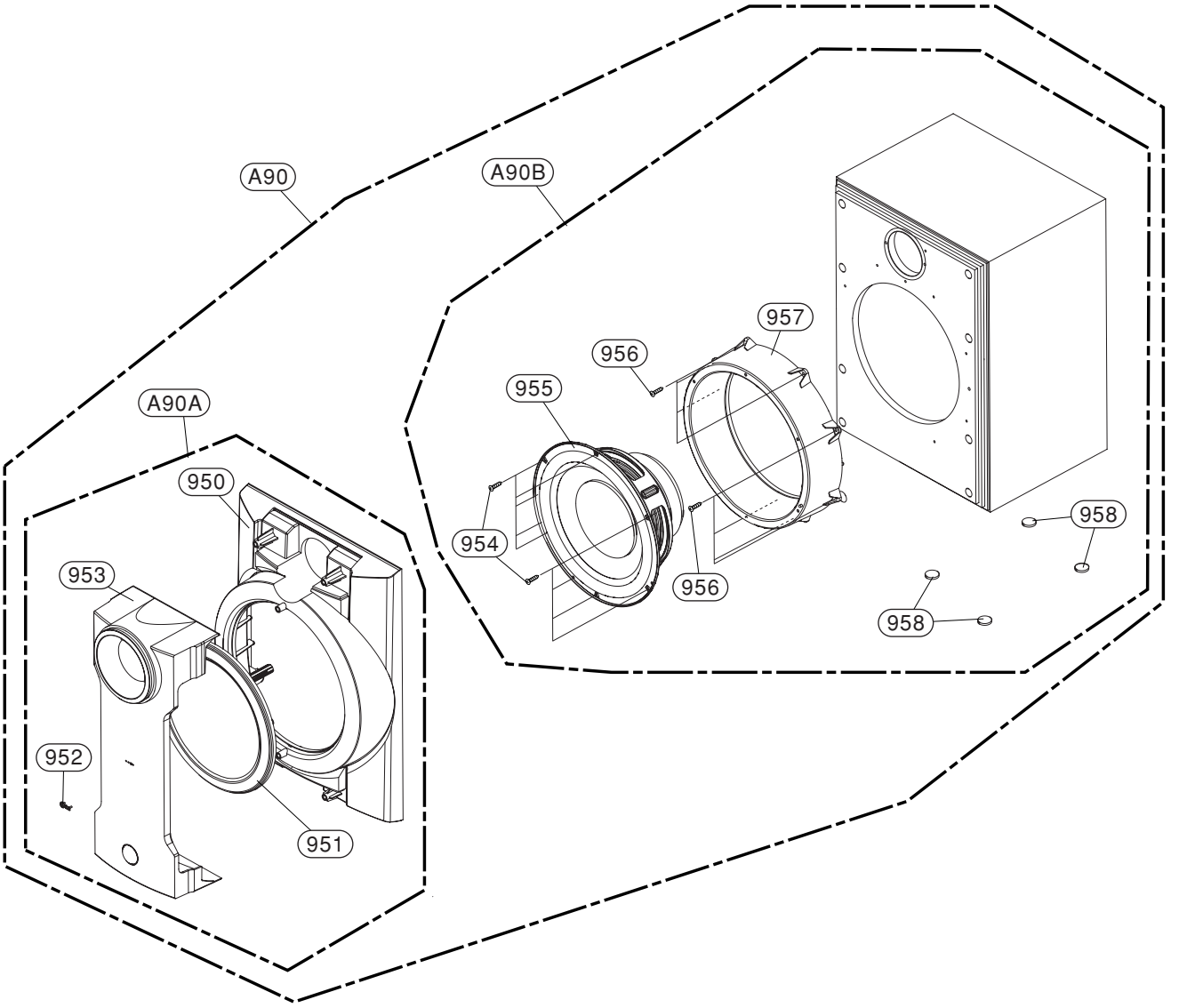
• FRONT SPEAKER (MCS903F)



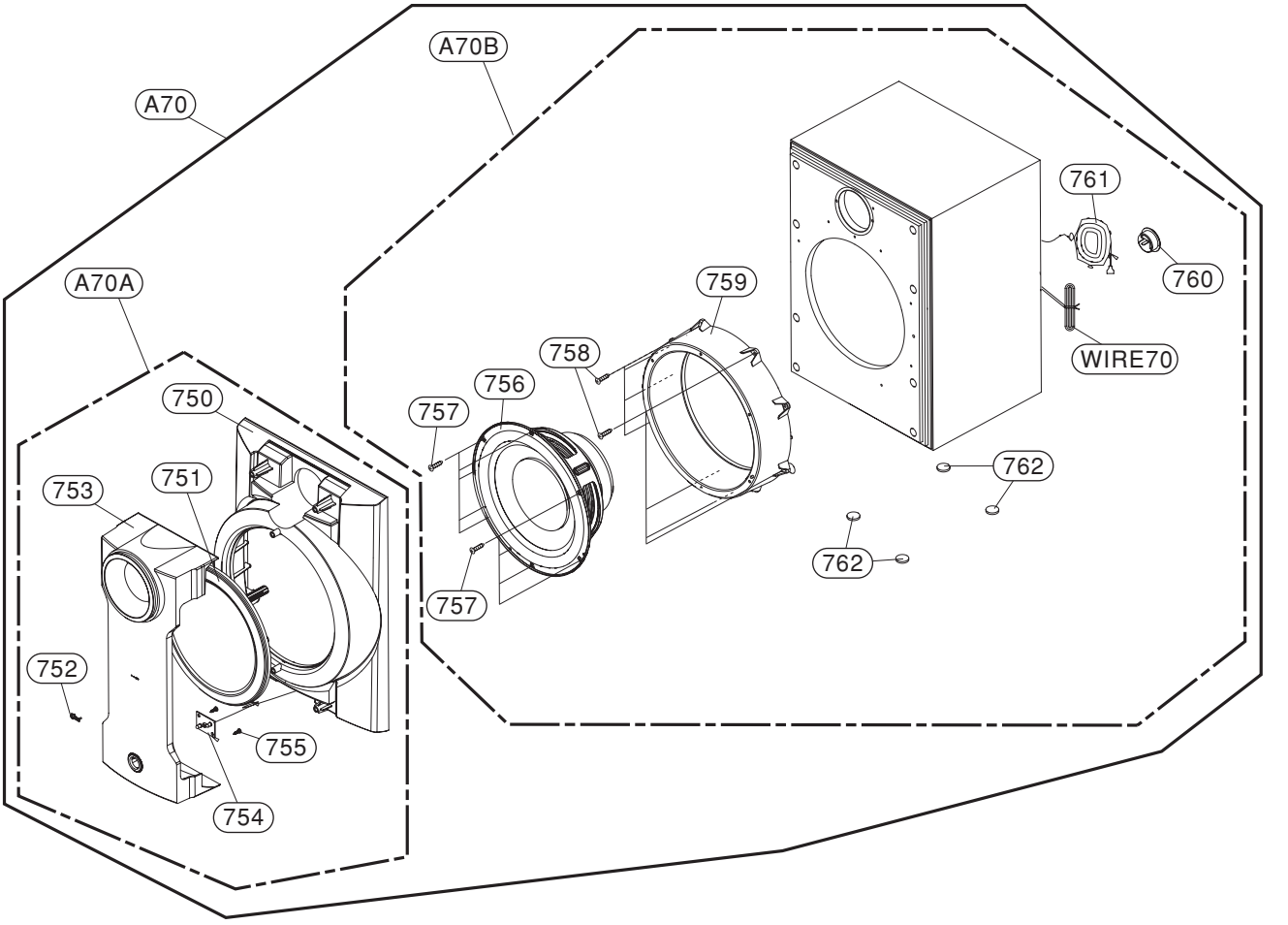
• REAR SPEAKER (MCS903S)



• PASSIVE SUBWOOFER (MCS903W)

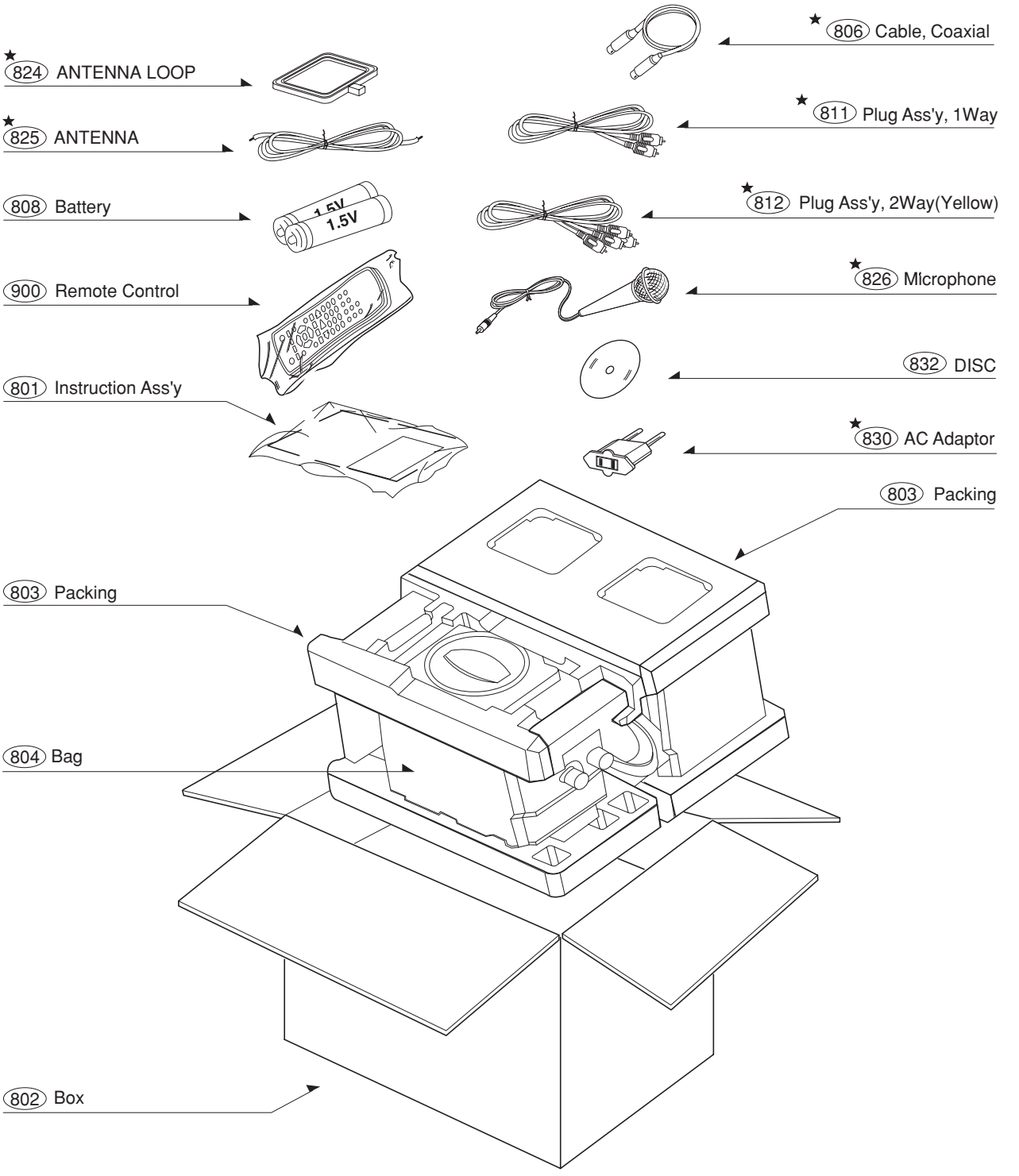


• PASSIVE SUBWOOFER (MCS903AW)



• PACKING ACCESSORY VIEW

★ OPTIONAL PARTS

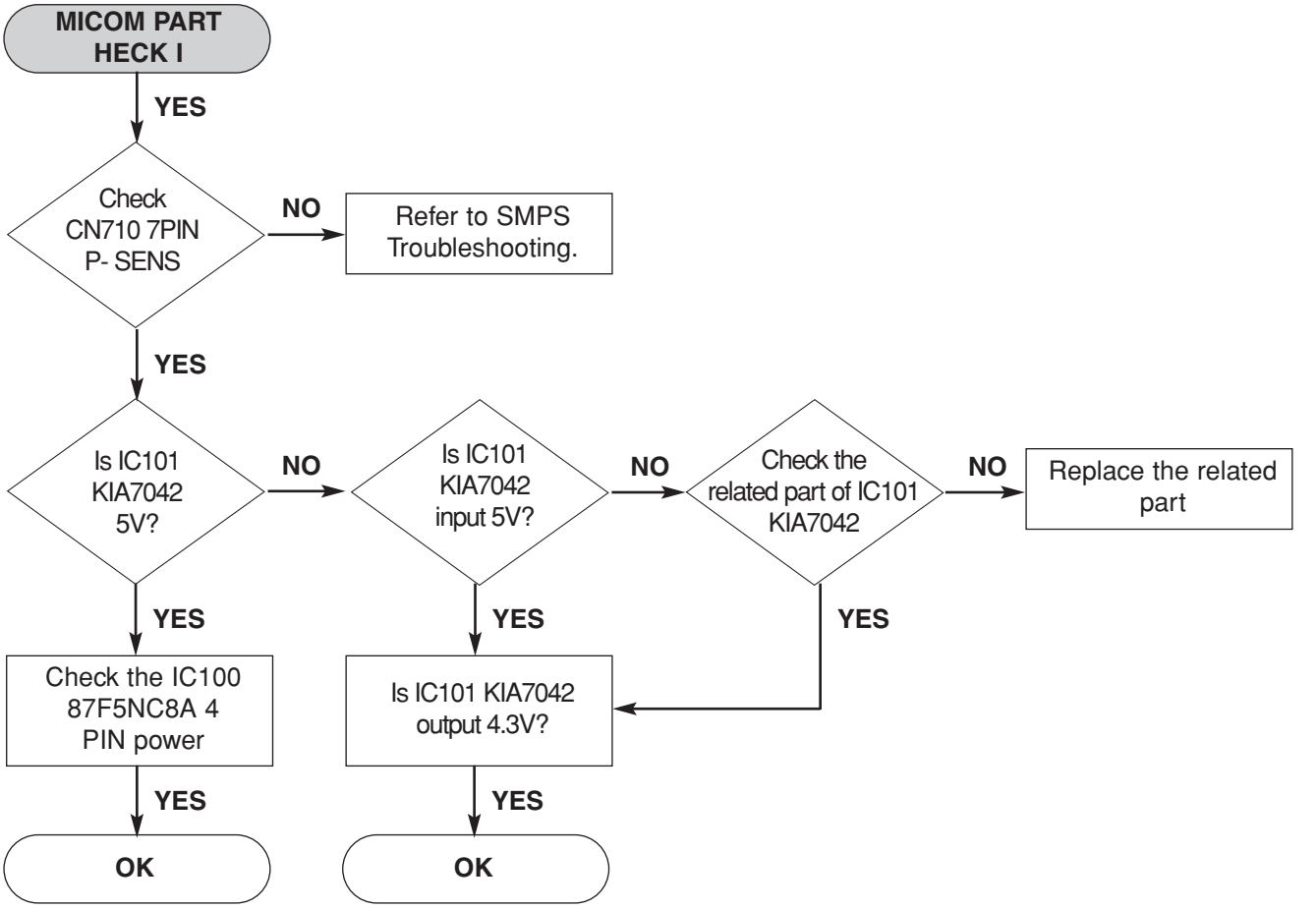


MEMO

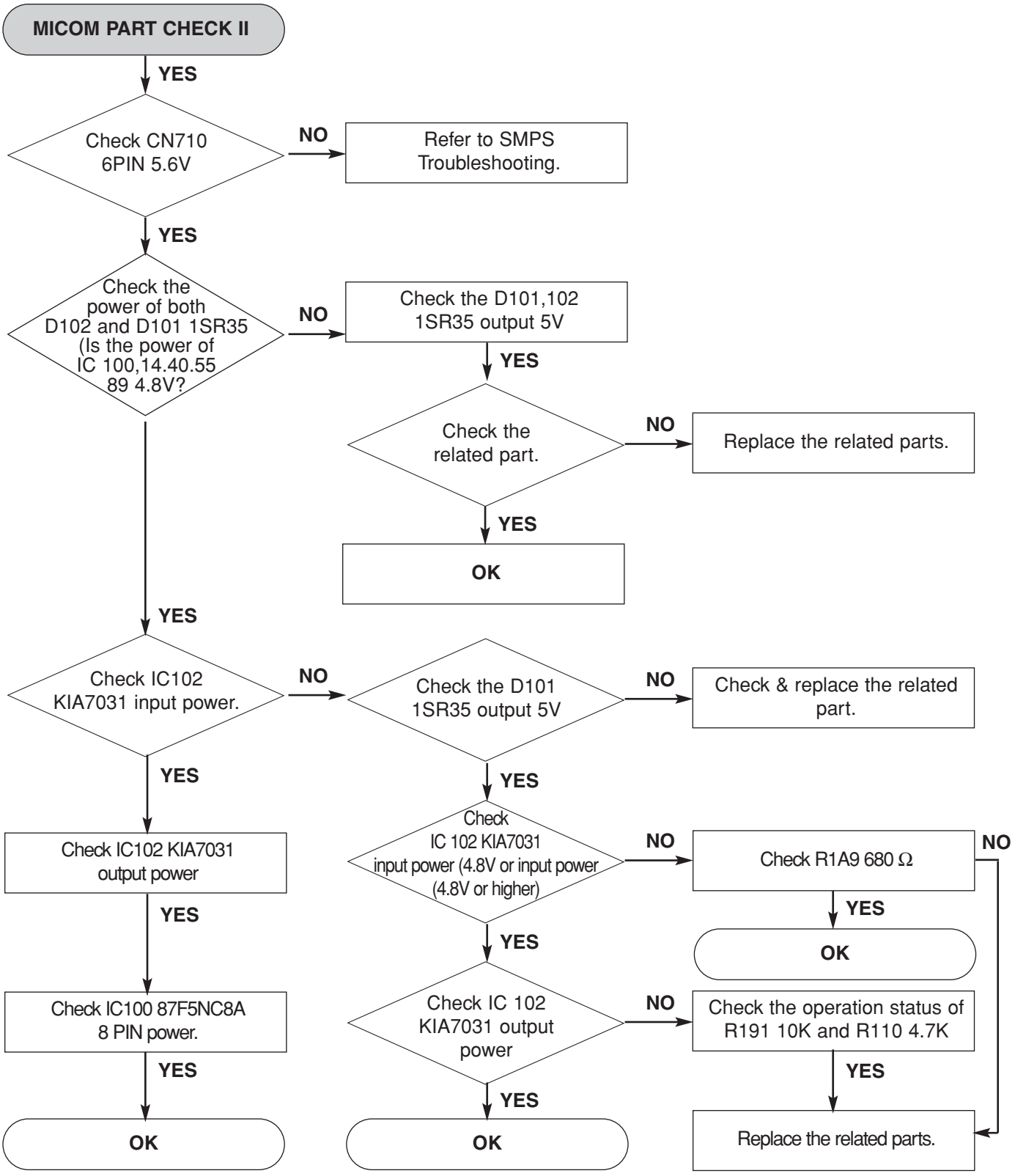
SECTION 3. AUDIO ELECTRICAL PART

❑ AUDIO ELECTRICAL TROUBLESHOOTING GUIDE

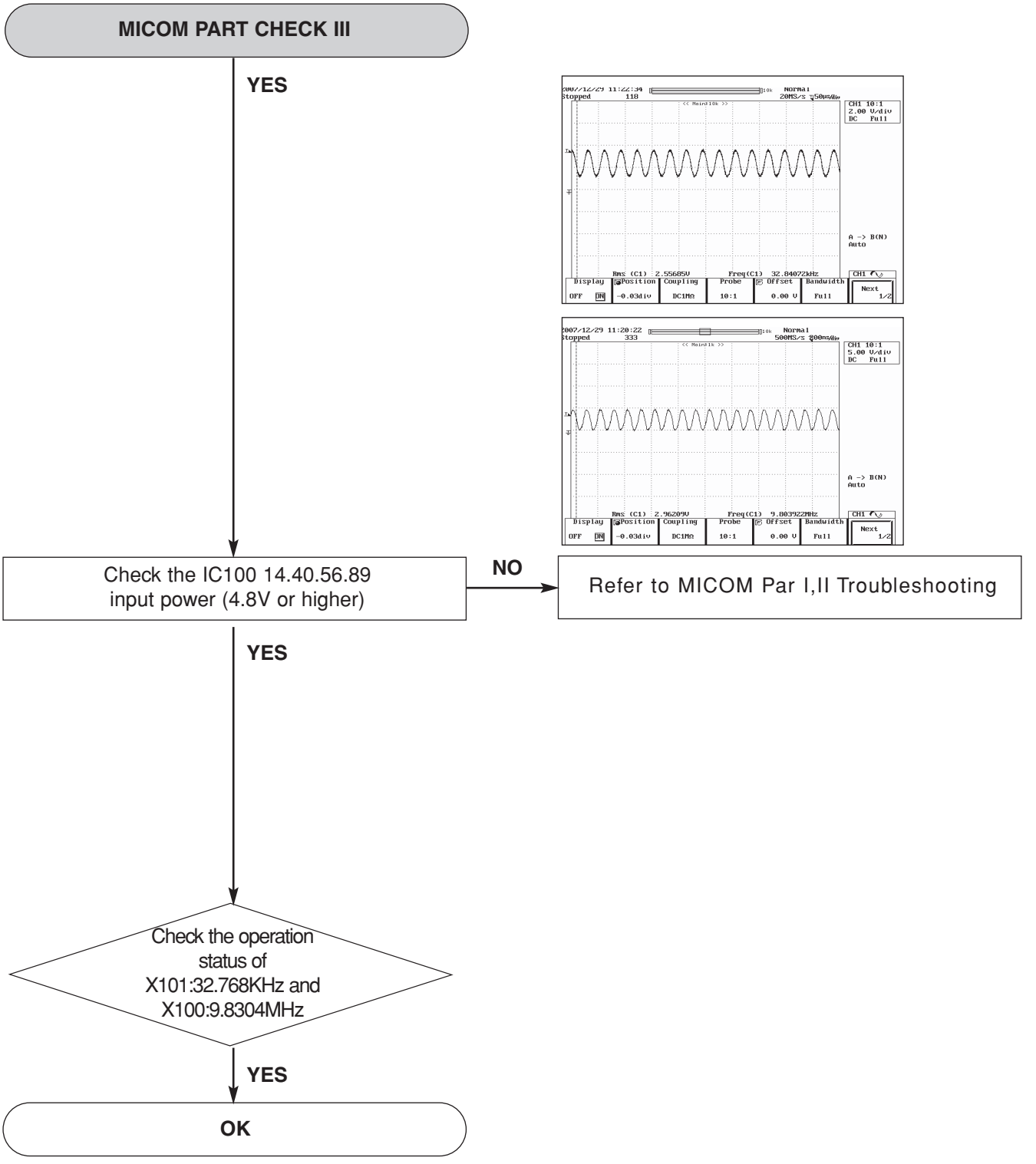
1. MICOM PART CHECK I



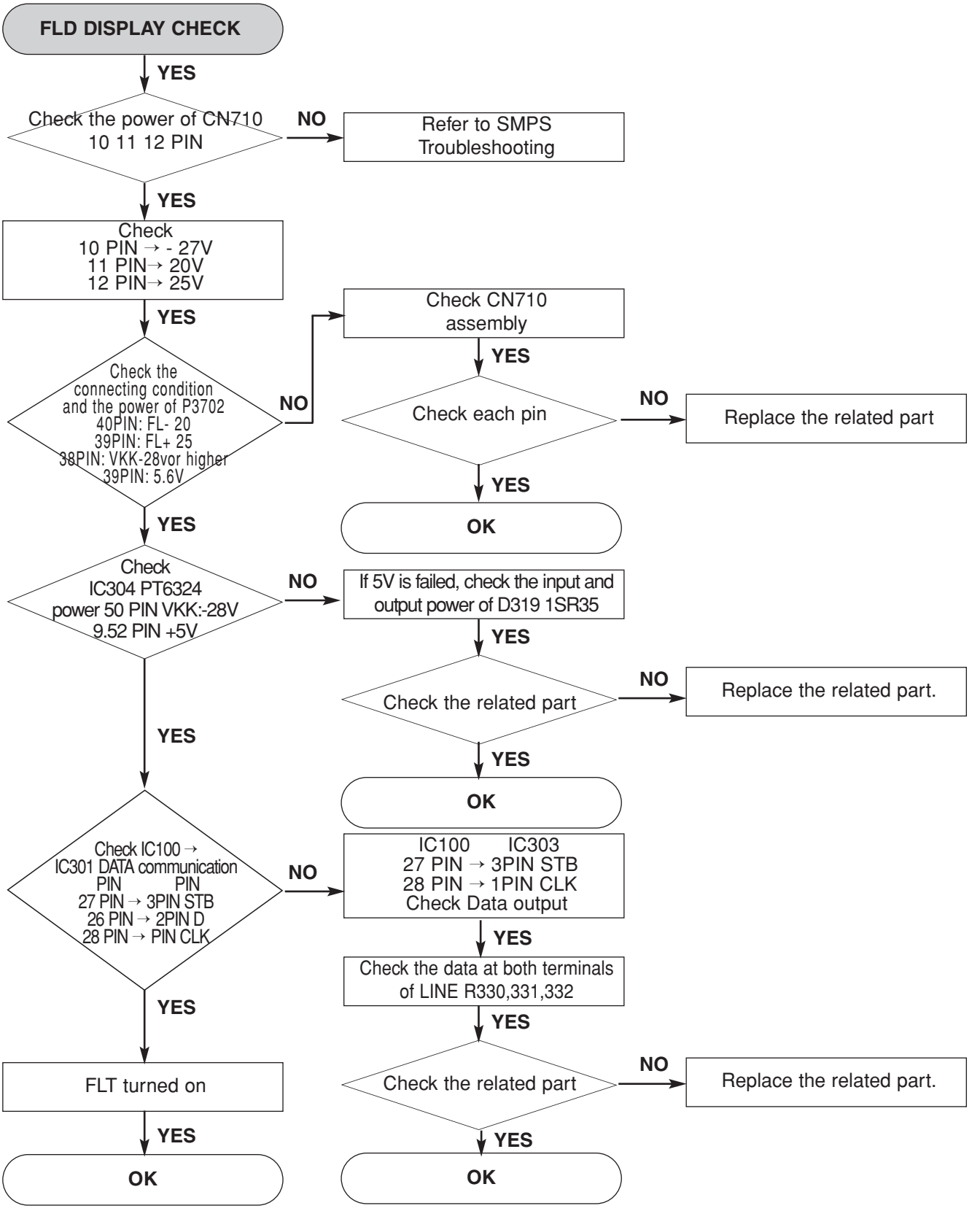
2. MICOM PART CHECK II



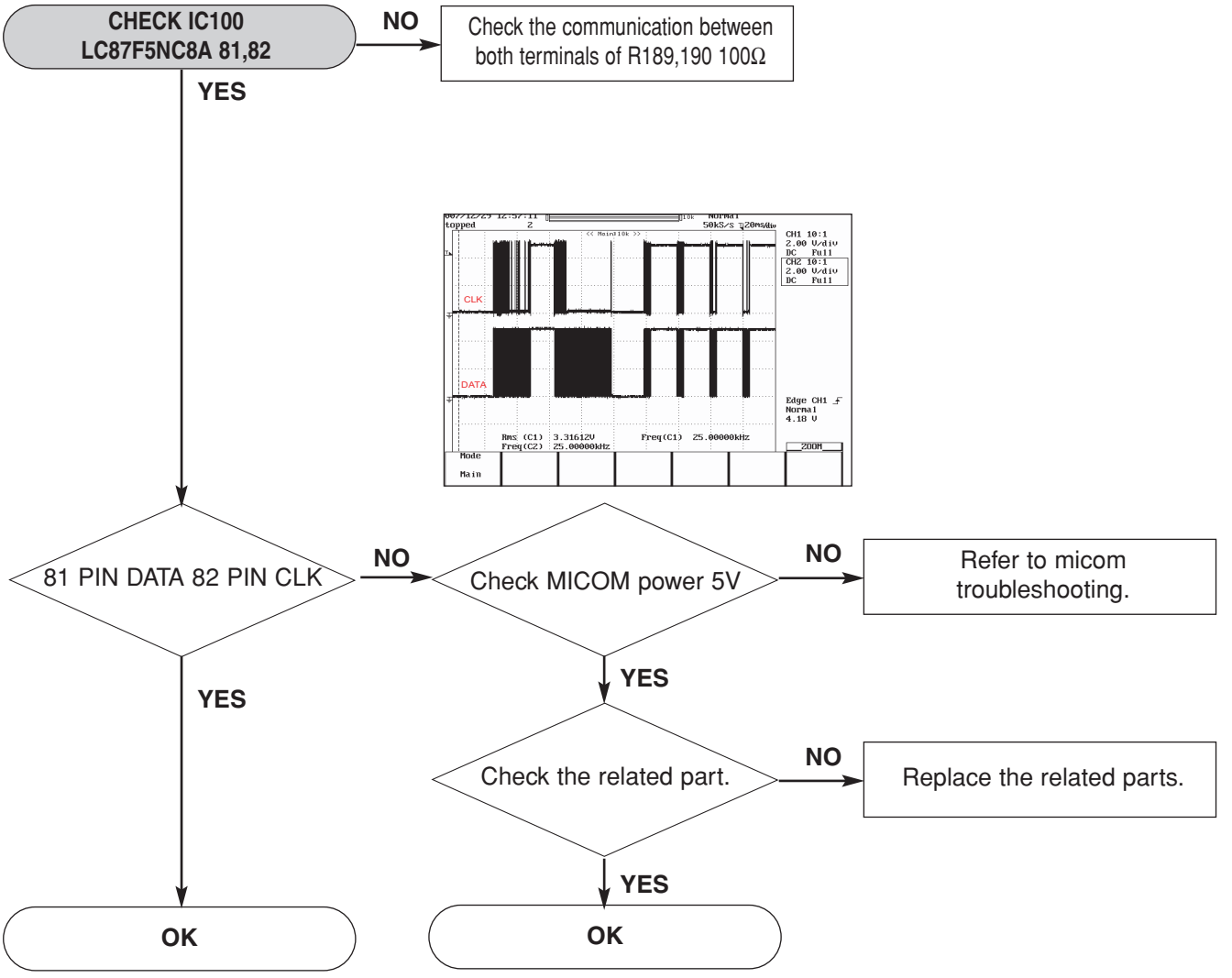
3. MICOM PART CHECK III



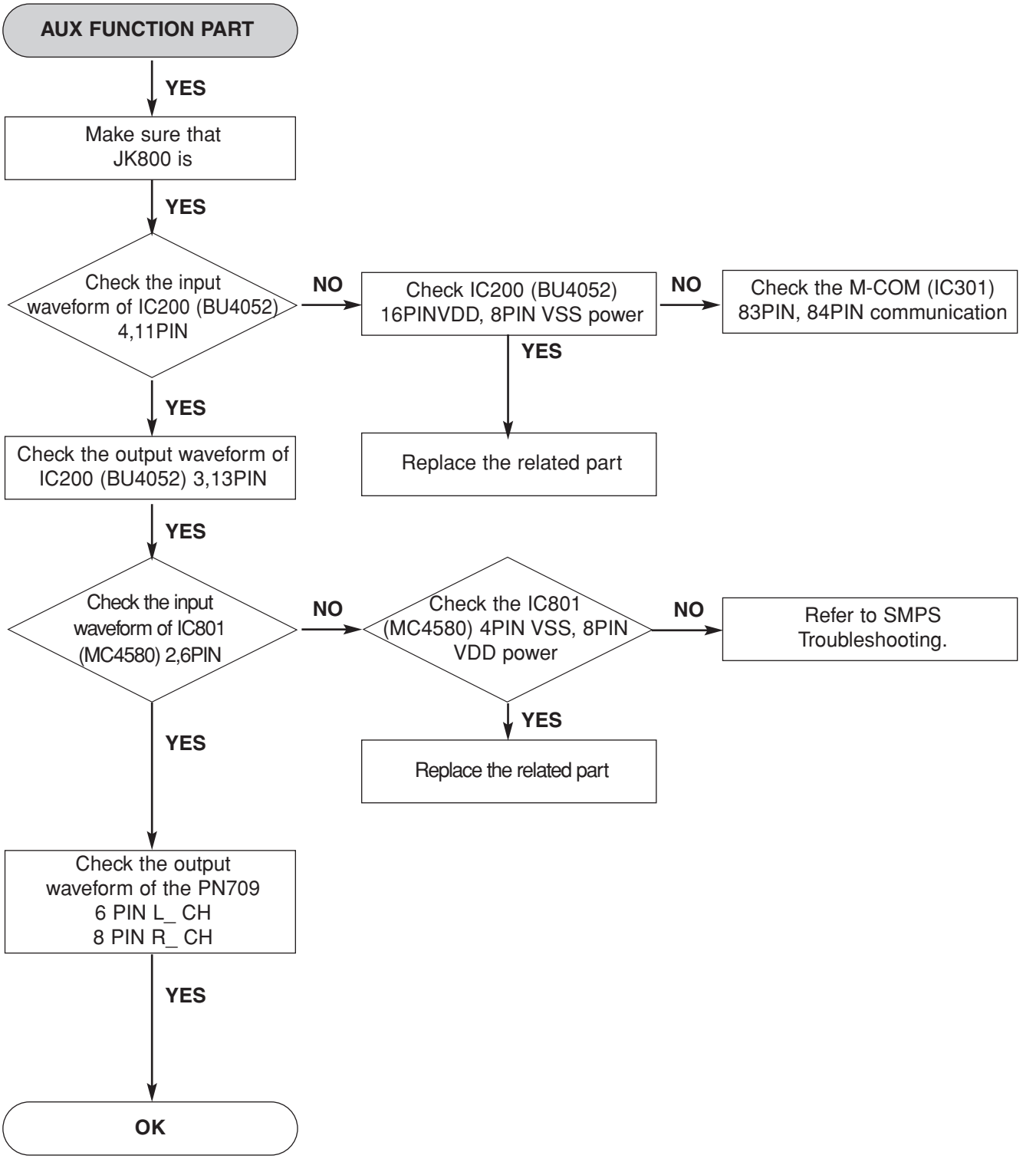
4. FLD DISPLAY PART CHECK



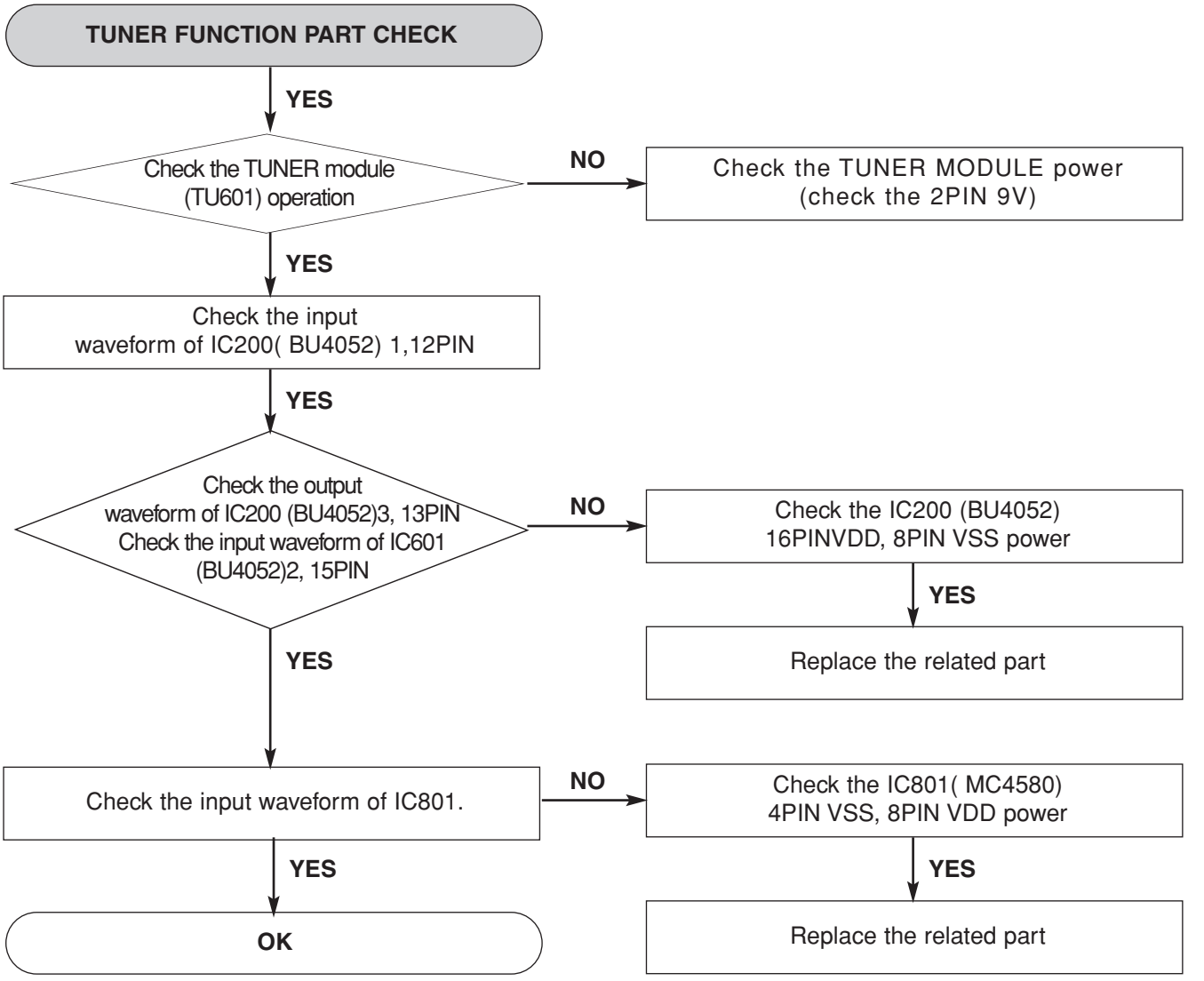
5. IC103 S-24CS16A01-J8T1GE CHECK



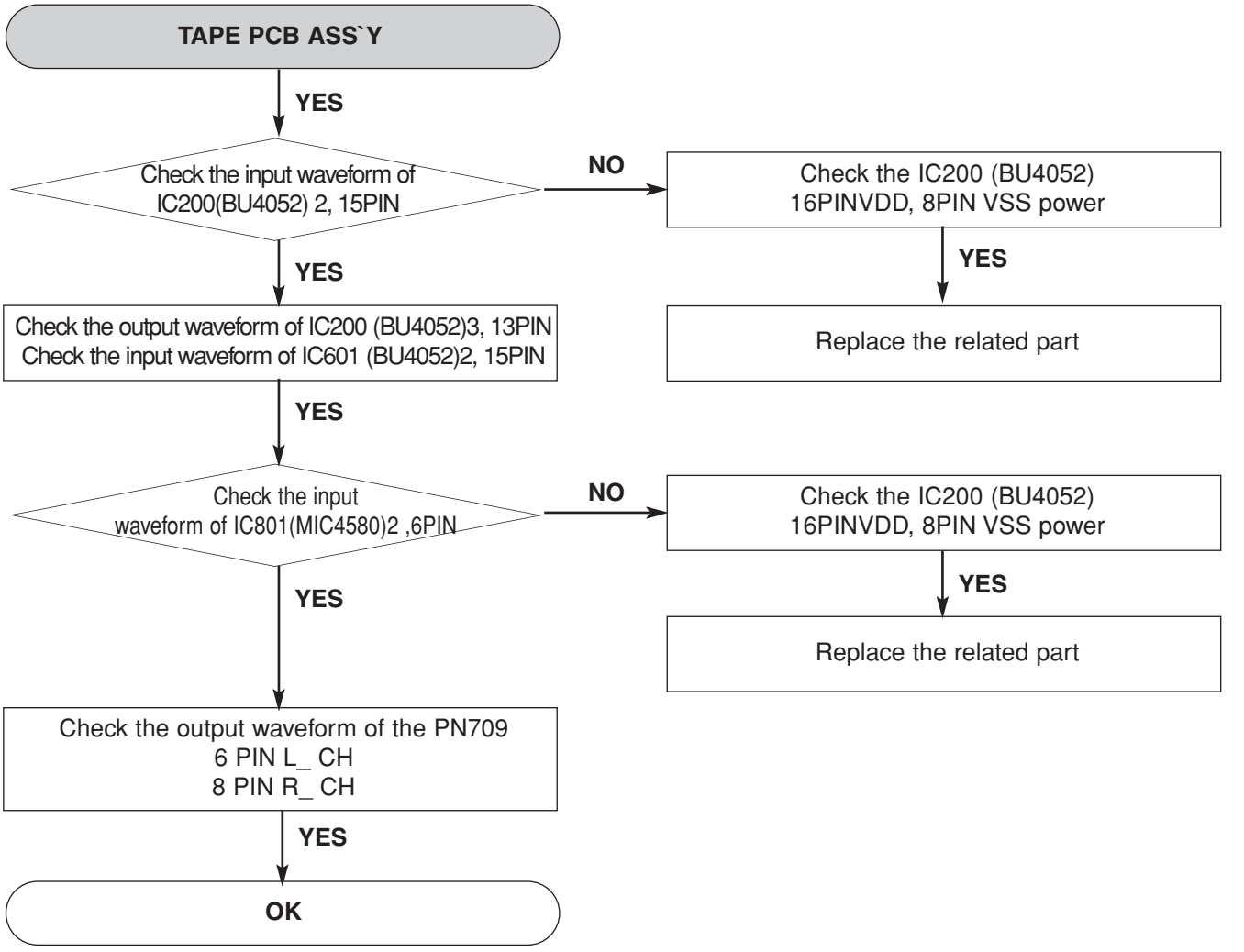
6. AUX FUNCTION PART CHECK



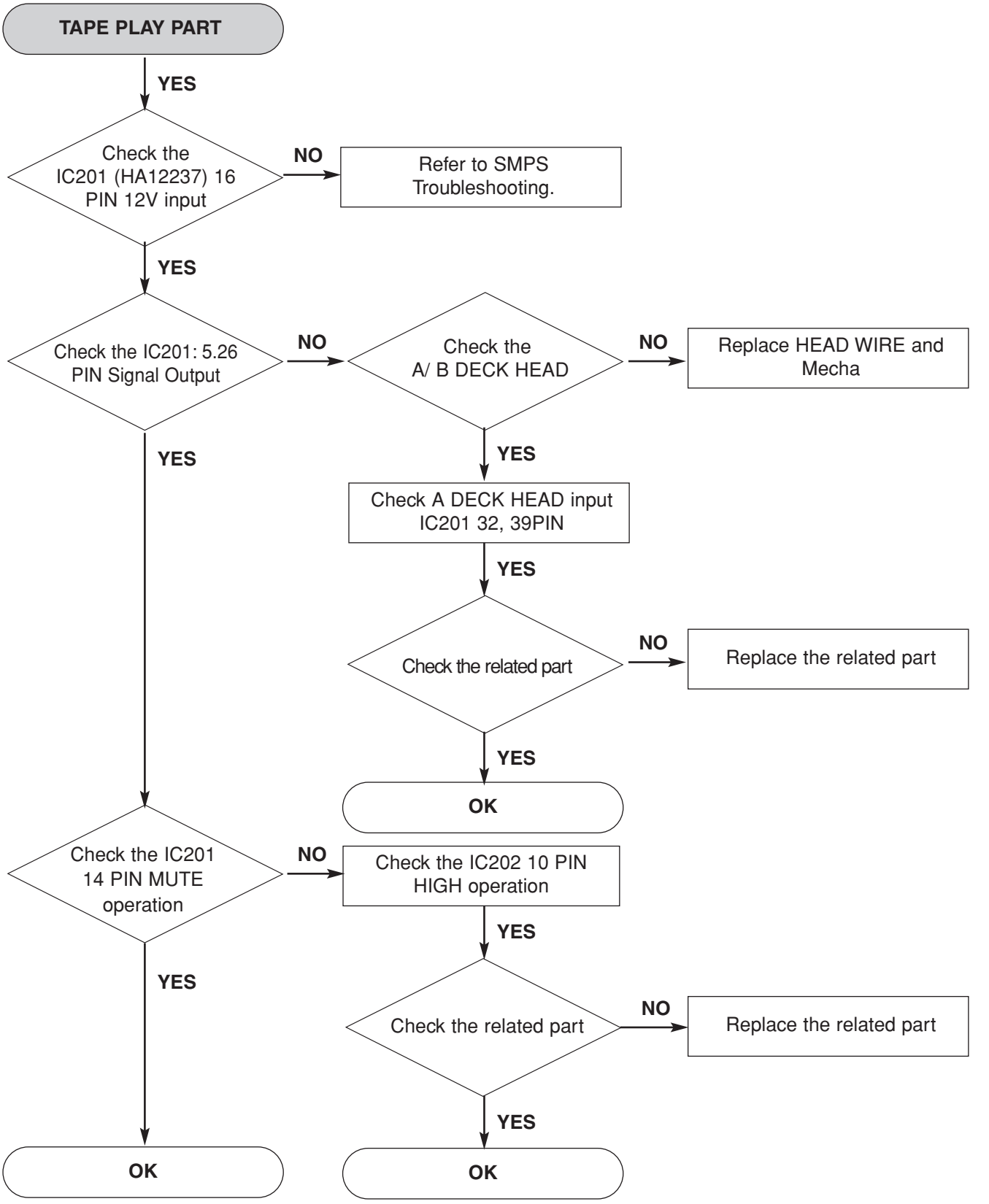
8. TUNER FUNCTION PART CHECK



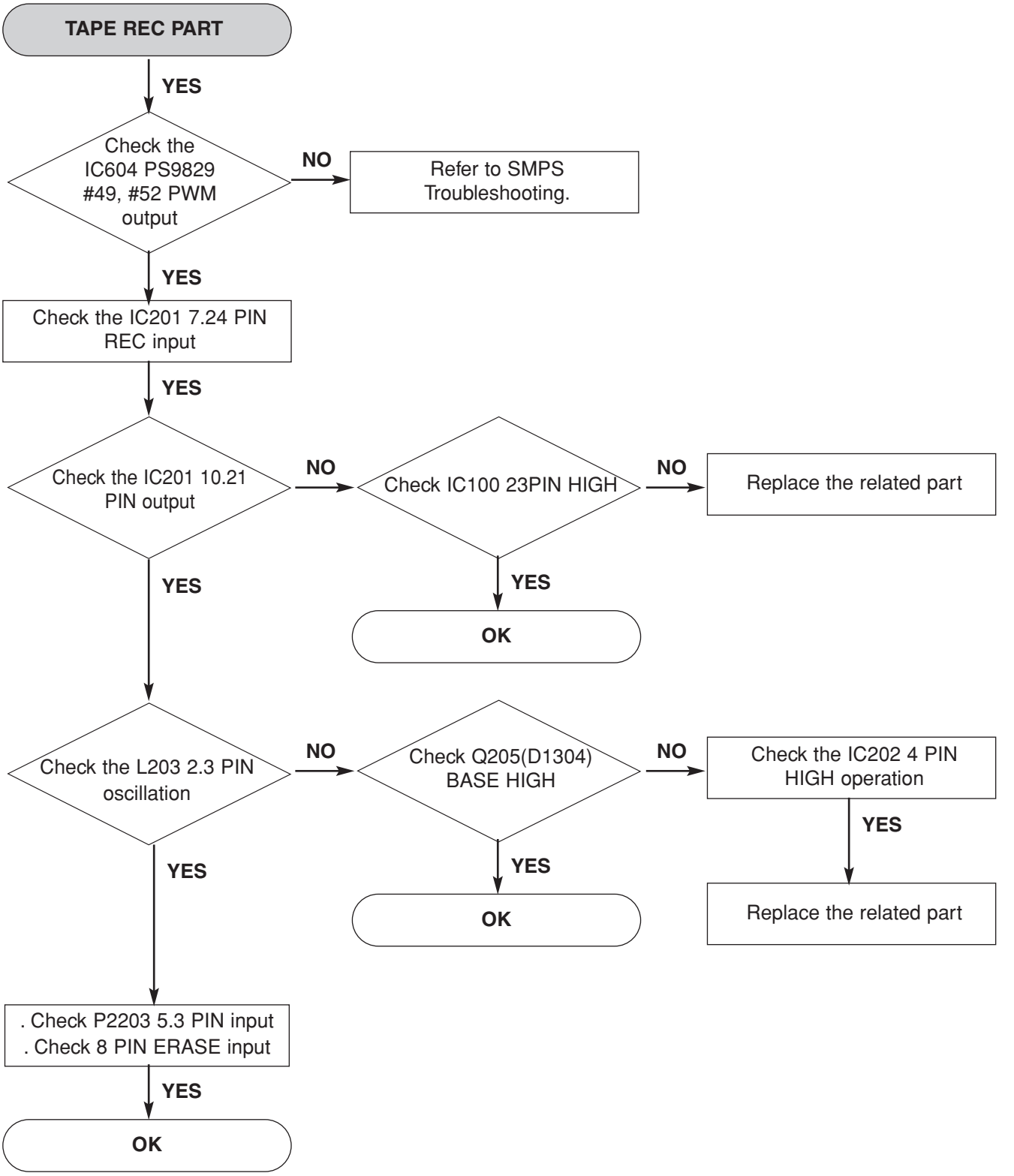
9. TAPE FUNCTION PART CHECK



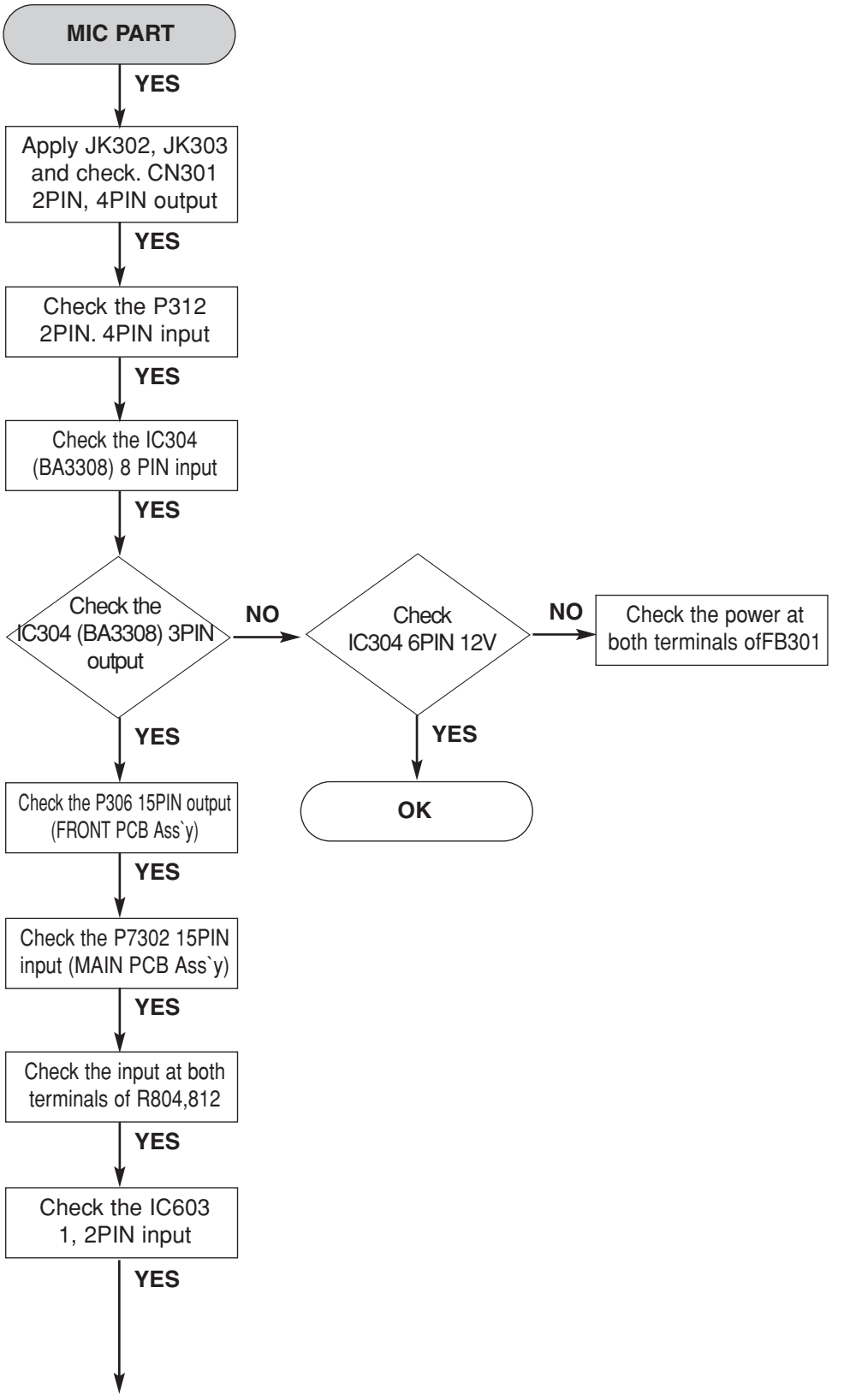
10. TAPE PLAY PART CHECK

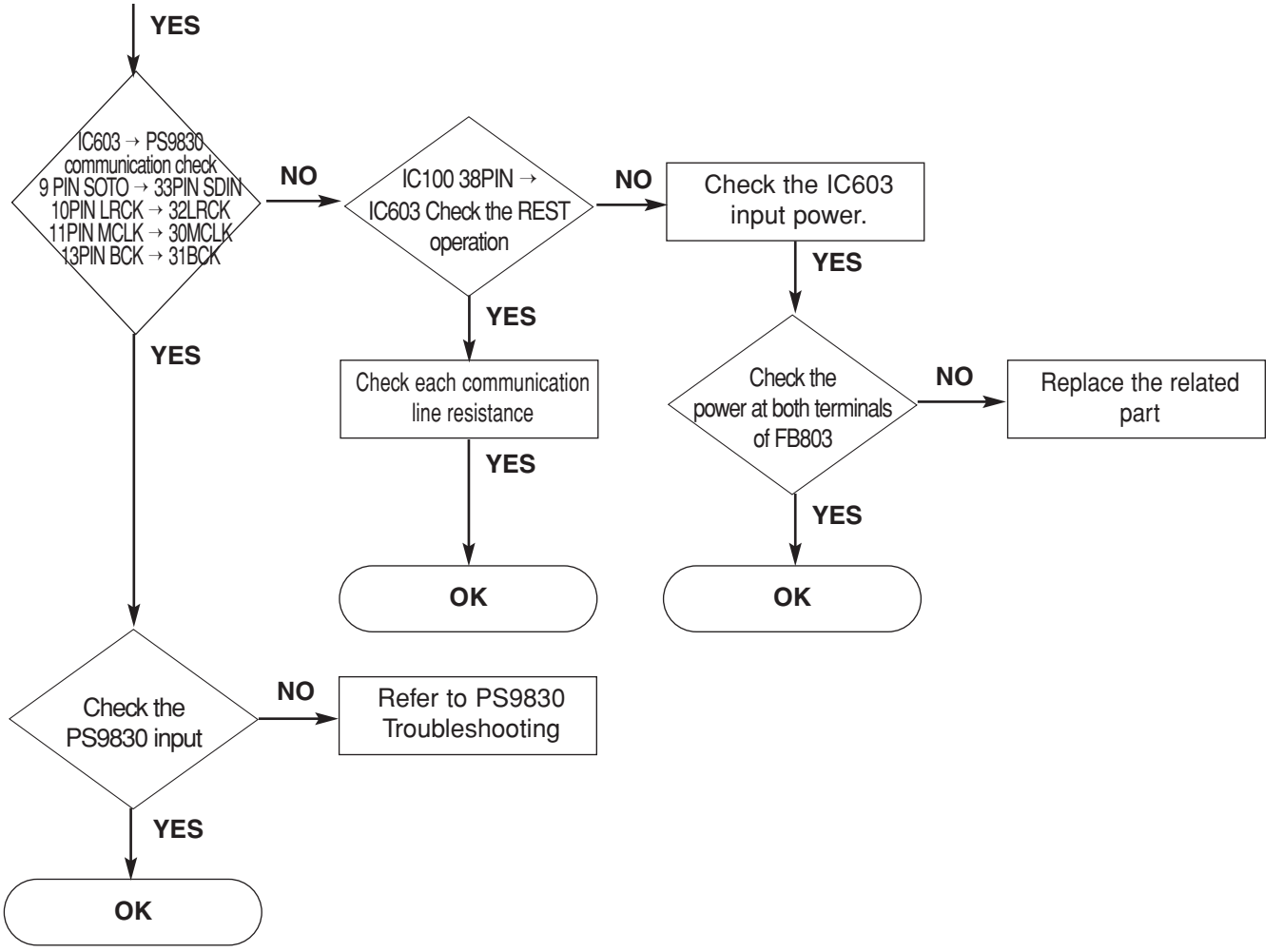


11. TAPE REC PART CHECK

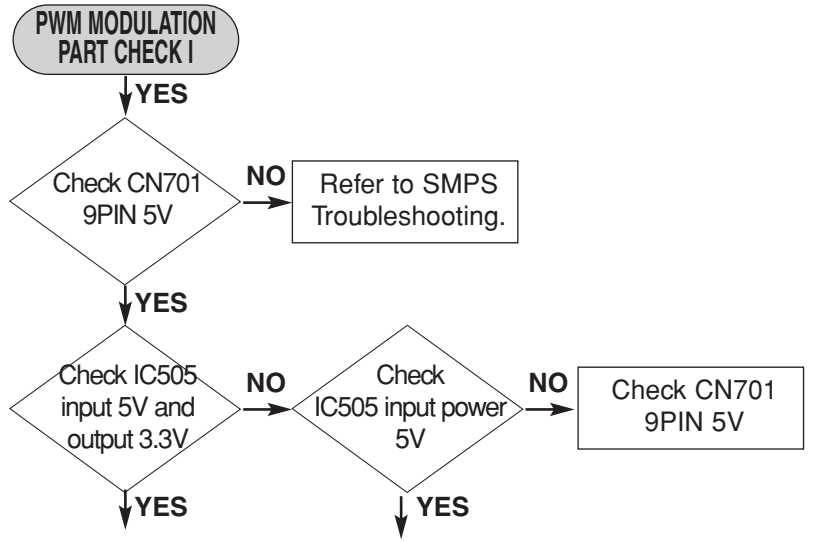


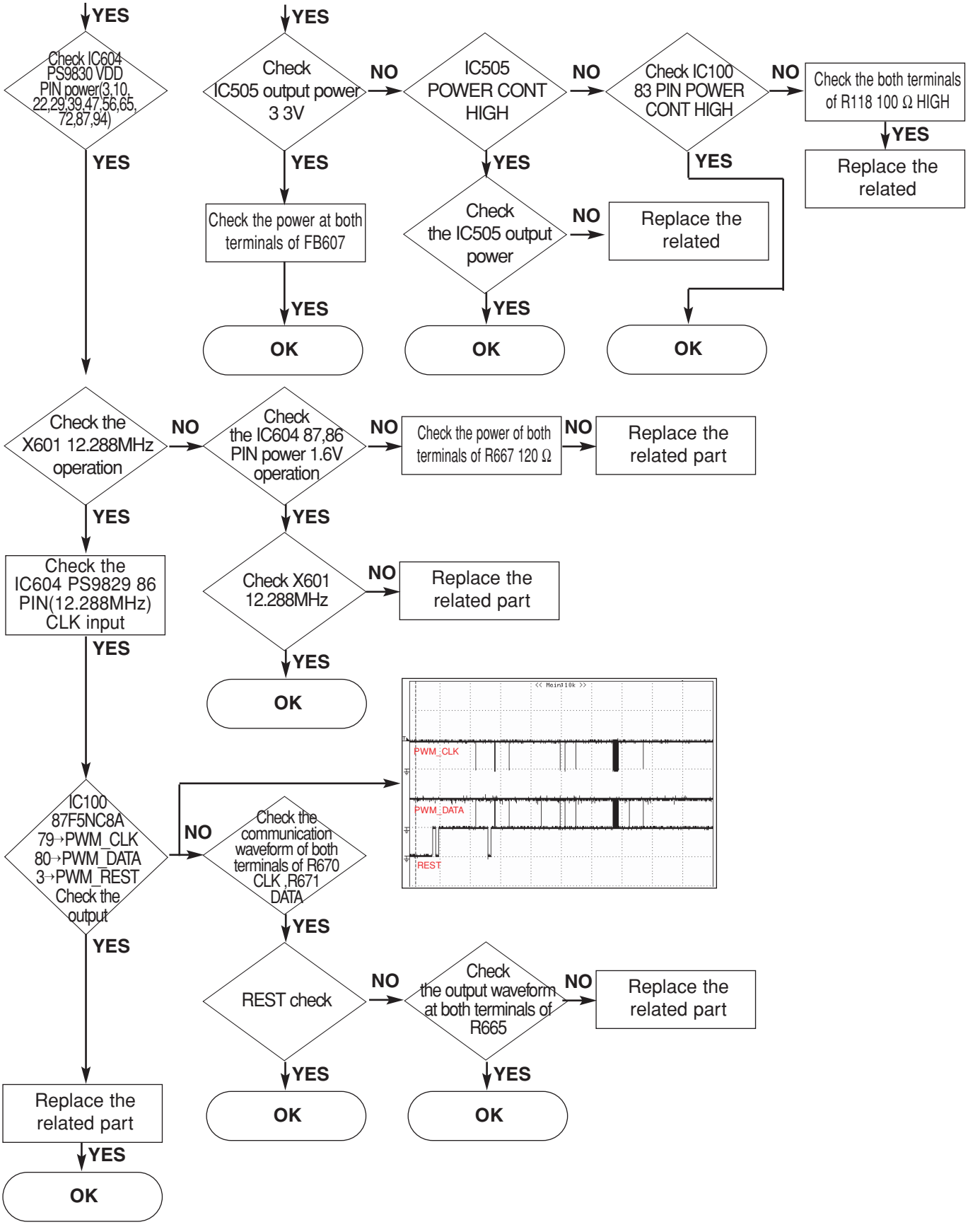
12. MIC PART CHECK



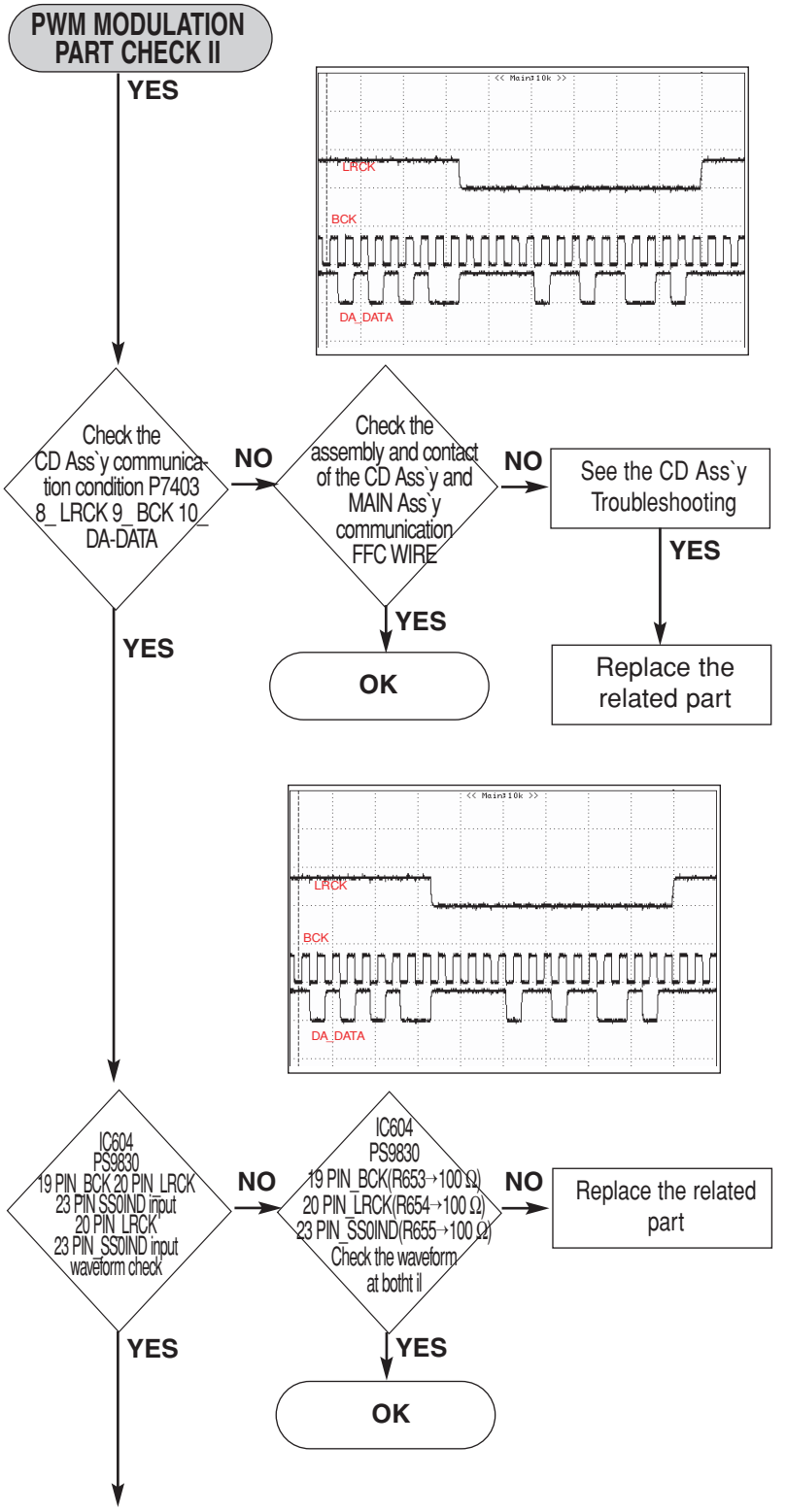


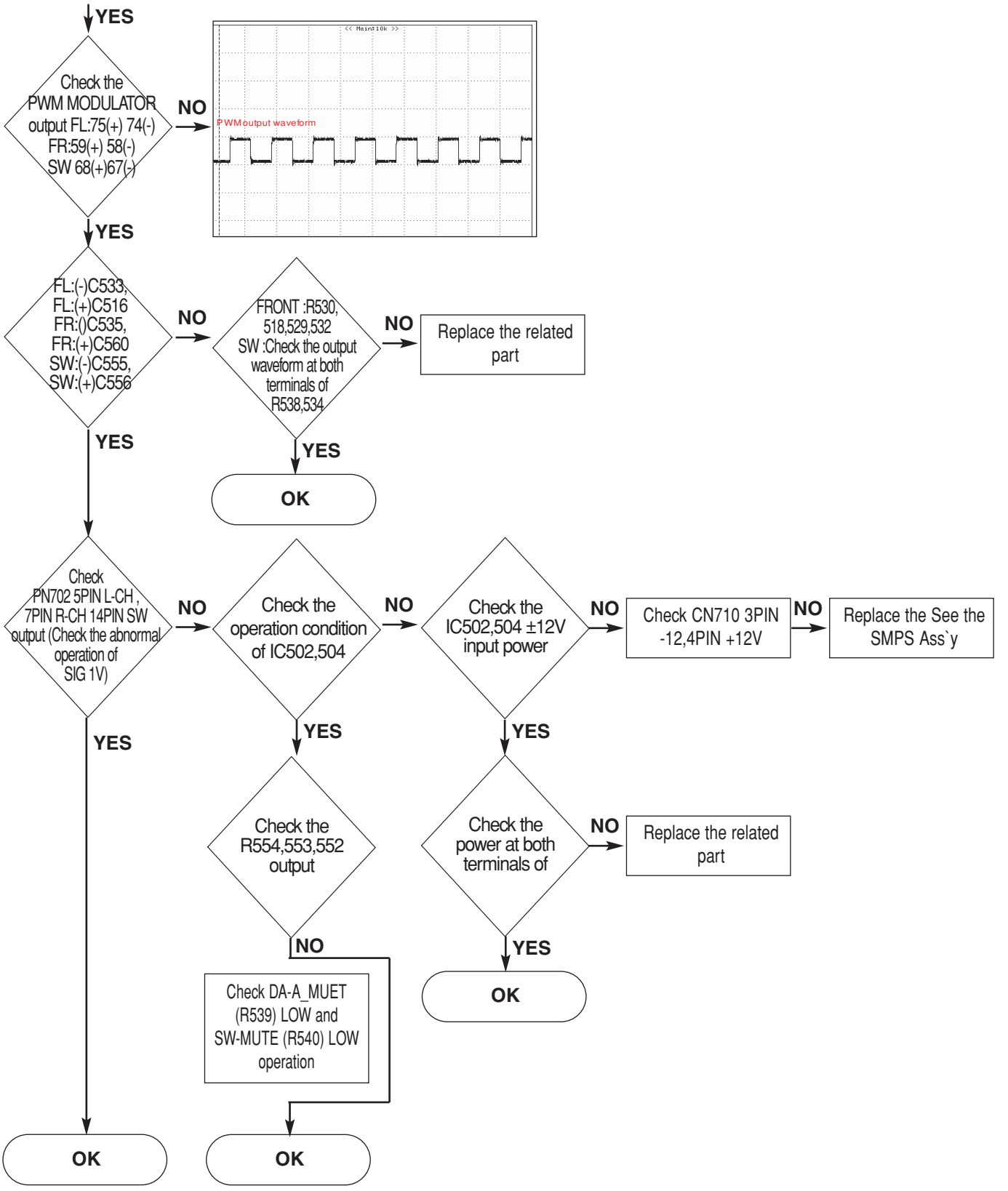
13. PWM MODULATION PART CHECK I



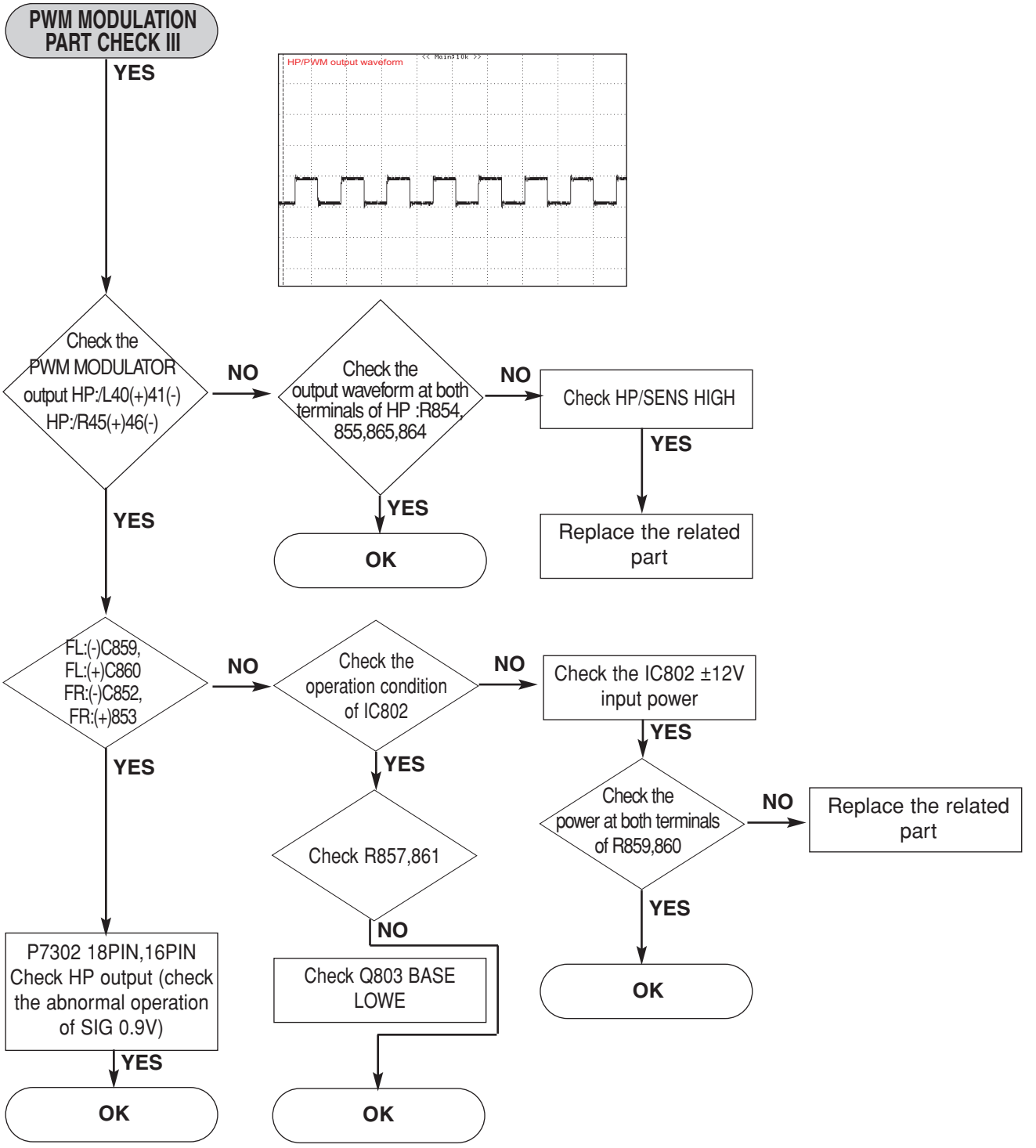


14. PWM MODULATION PART CHECK II

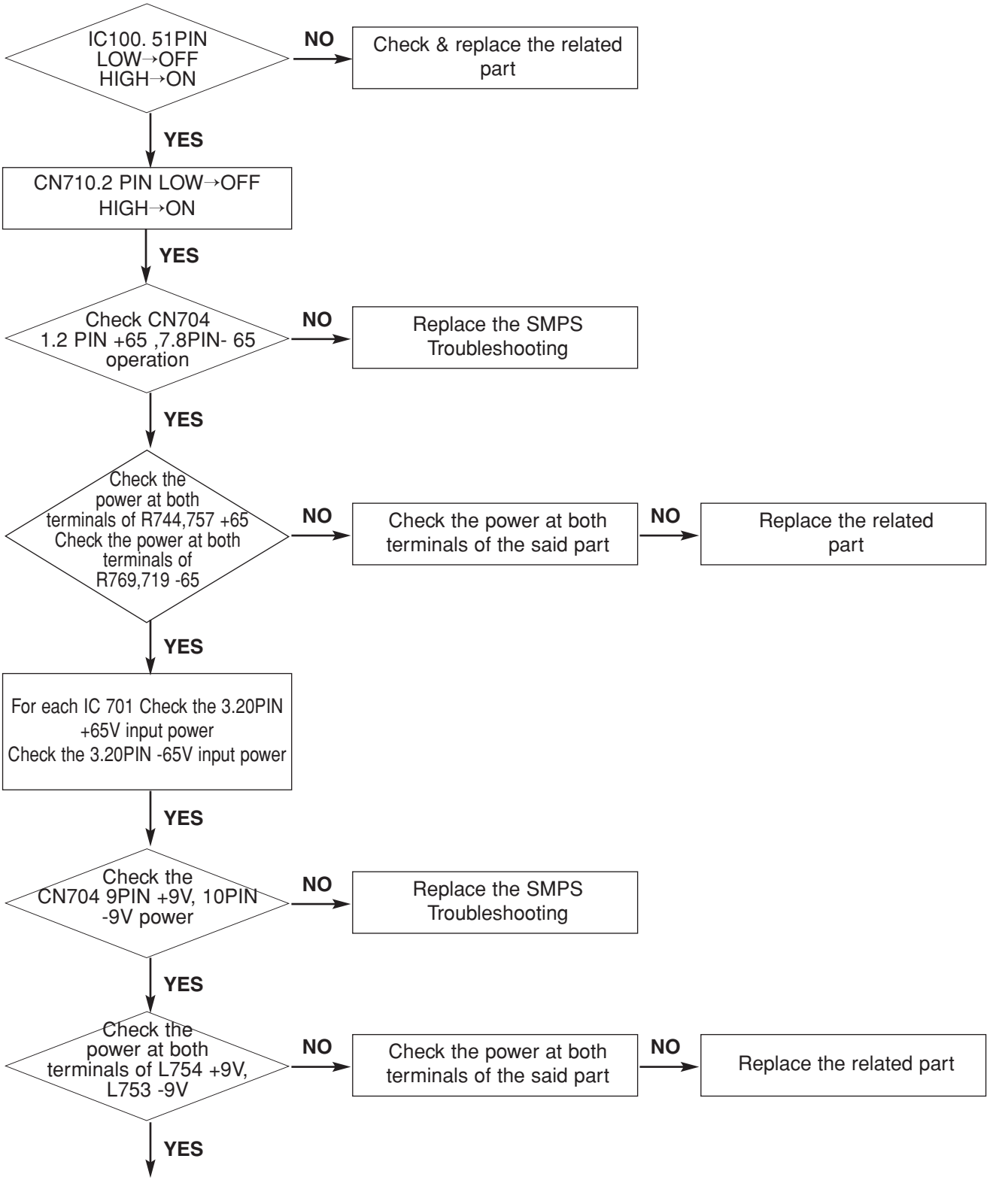


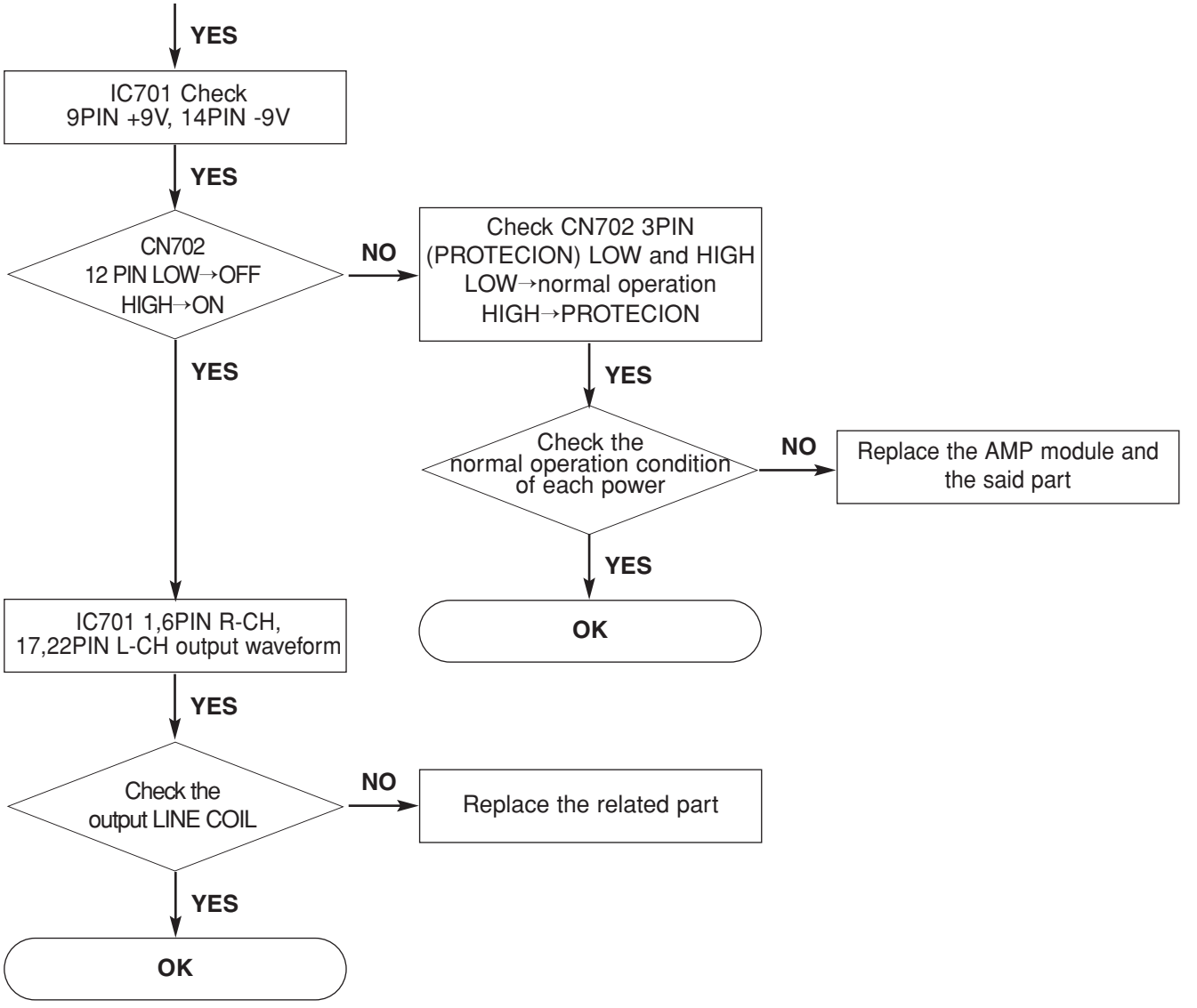


15. PWM MODULATION PART CHECK III (HEAD PHONES)



16. POWER AMP PART CHECK

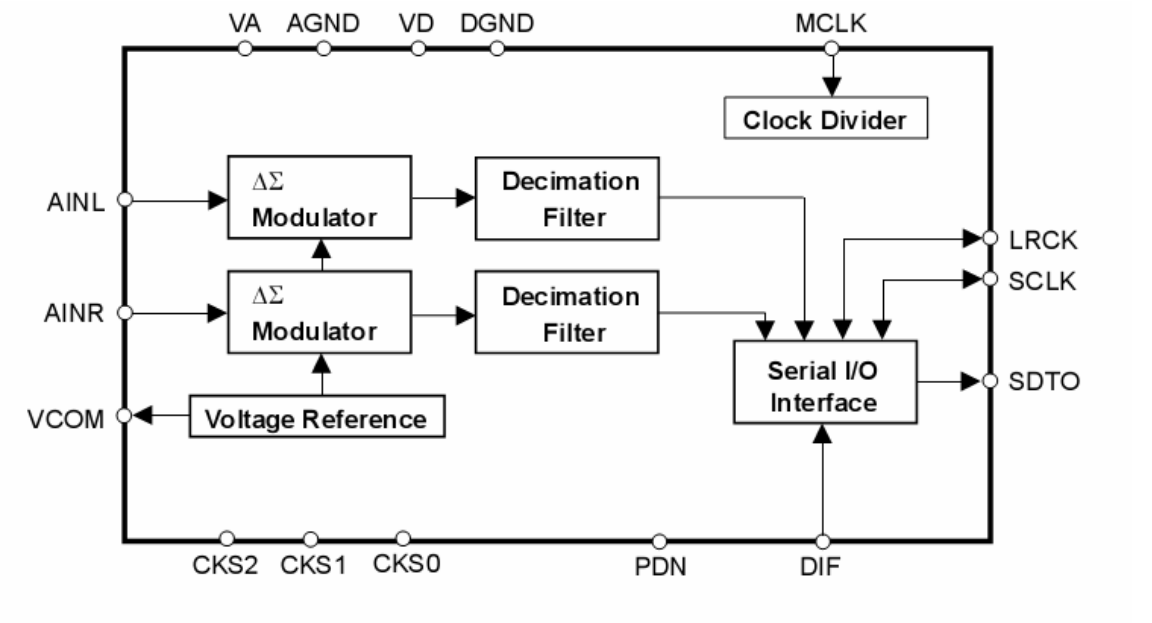




❑ INTERNAL BLOCK DIAGRAM OF ICs

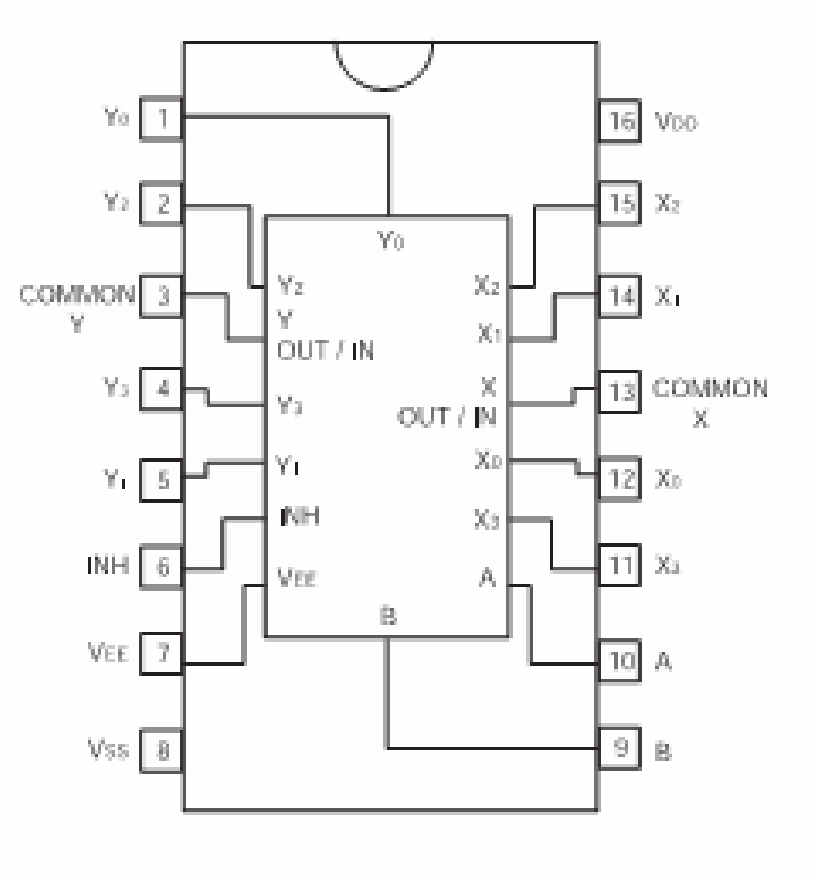
1. AK5358

• BIOCK DIAGRAM



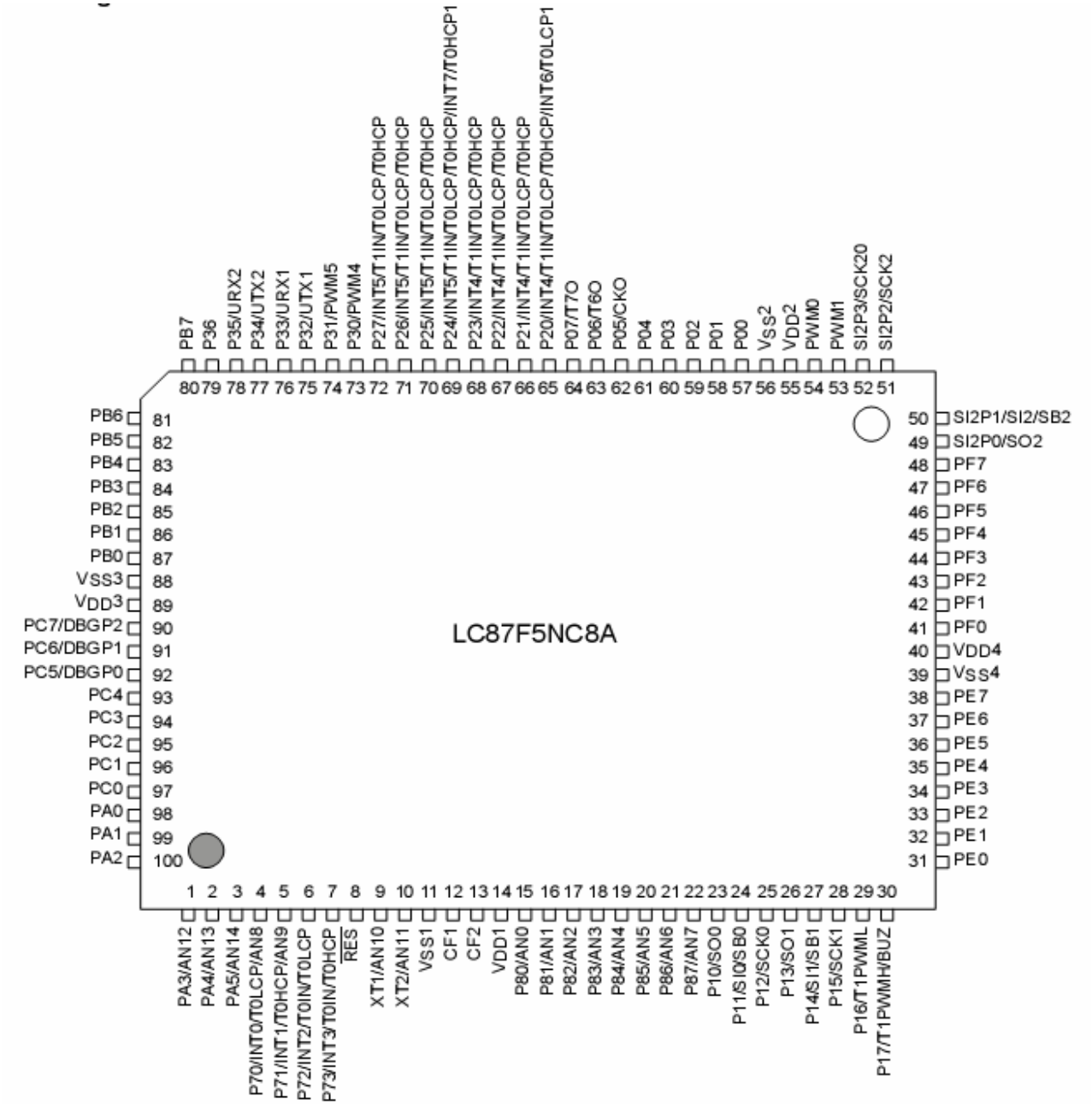
2. BU4052

• BIOCK DIAGRAM



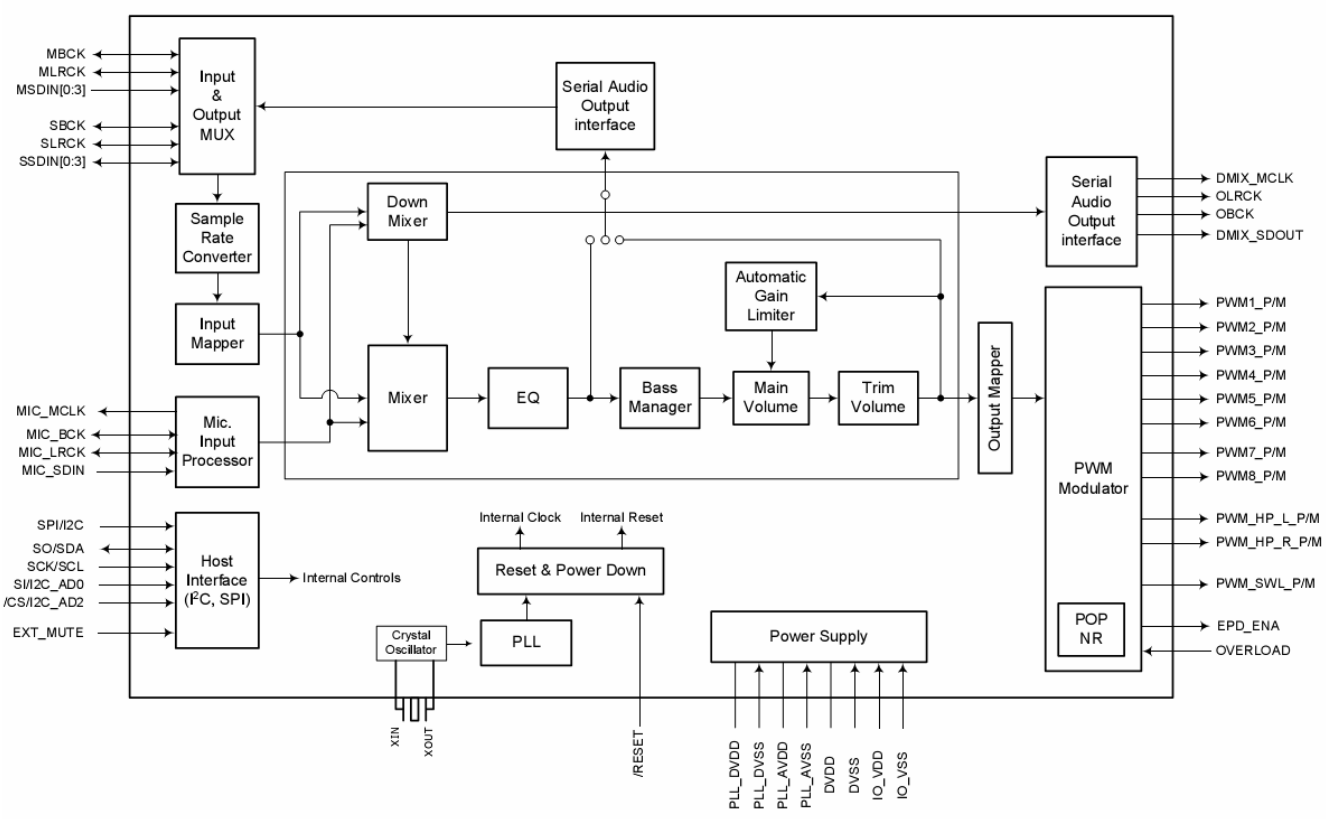
3. LC87F5NC8A_AUDIO MICOM

• PIN CONFIGURATION



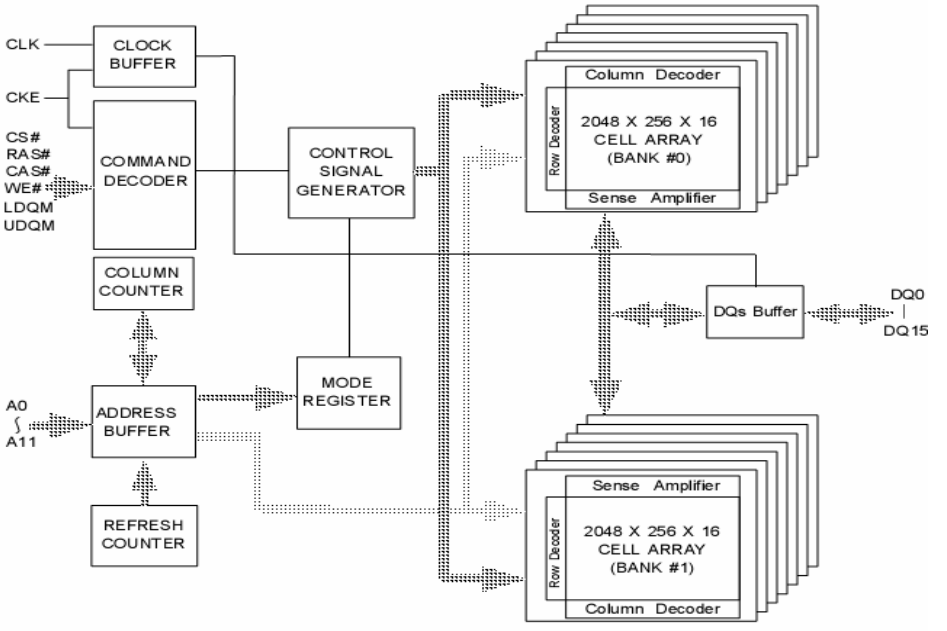
4. PS9830B_PWM IC

• BIOCK DIAGRAM



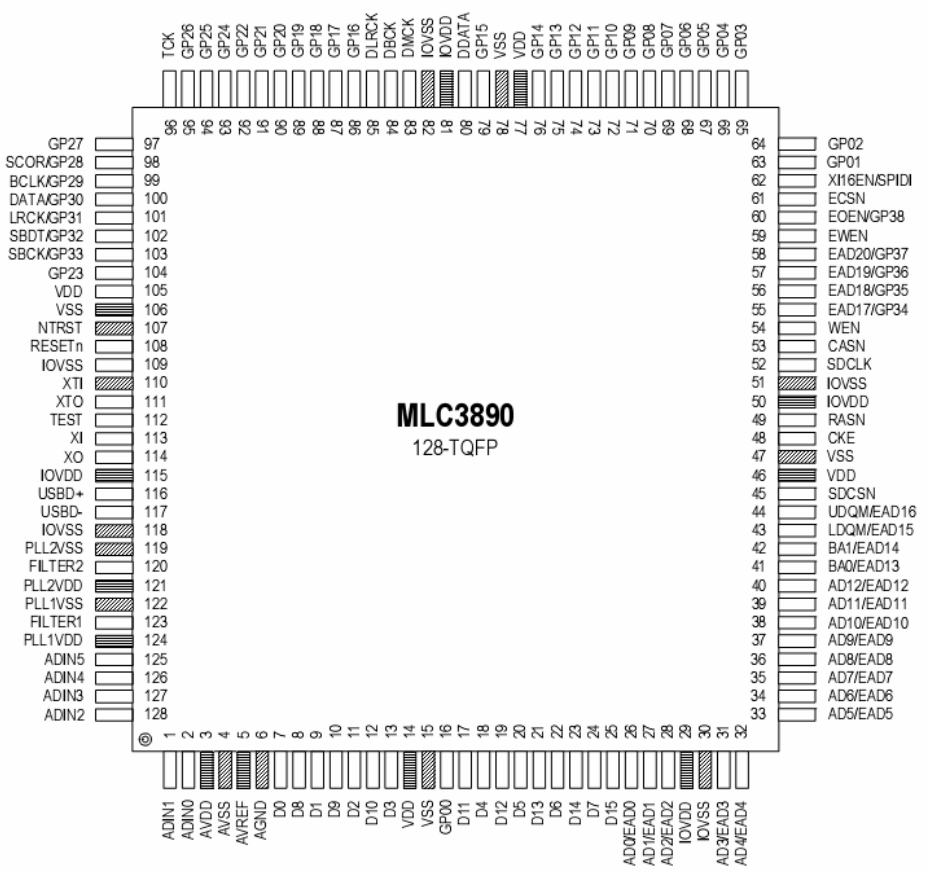
5. EM636165_SDRAM

• BIOCK DIAGRAM



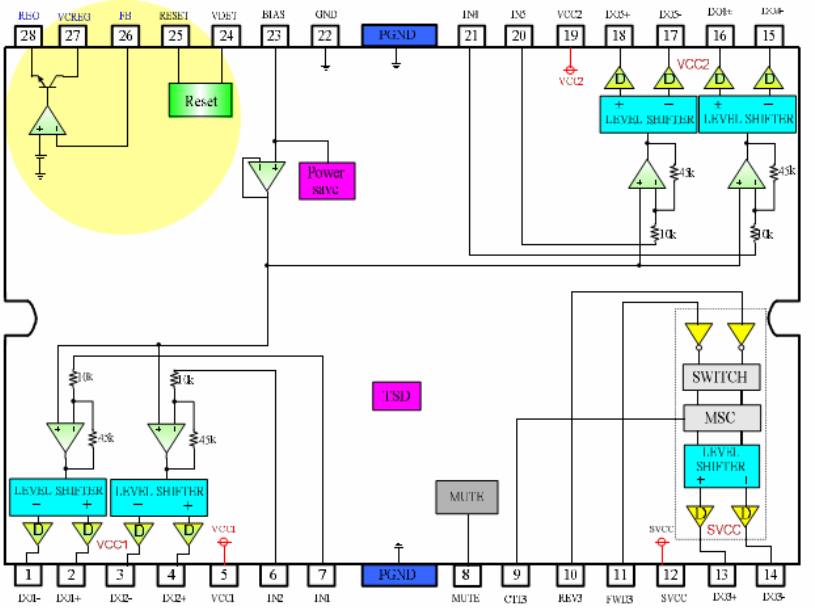
6. MLC3895_DSP

• PIN CONFIGURATION



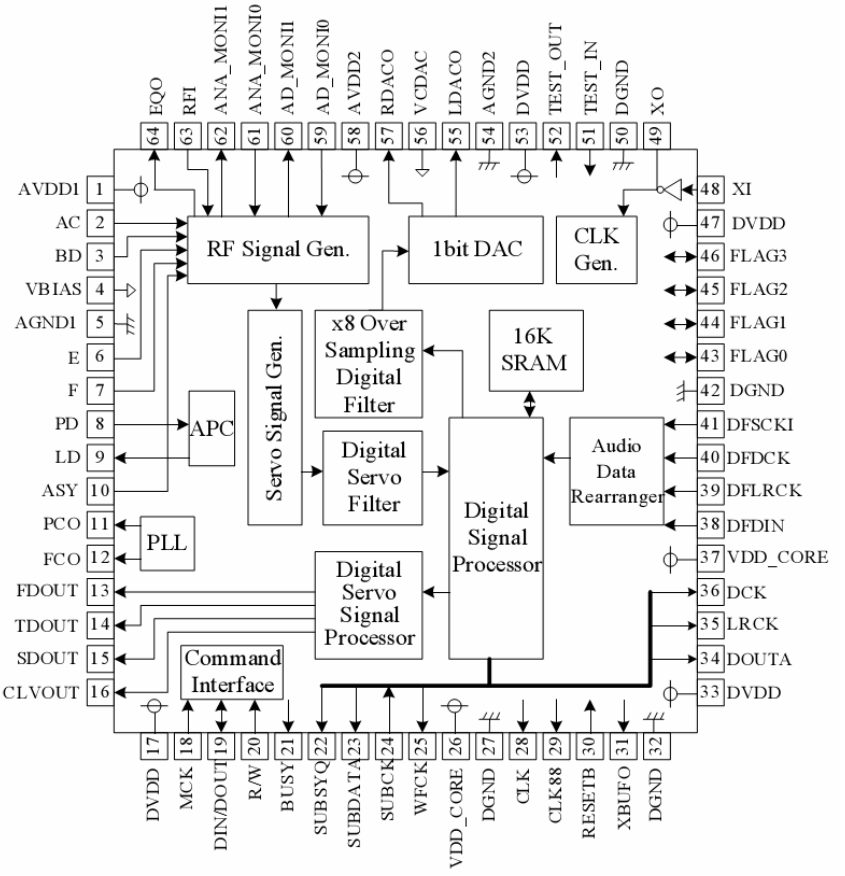
7. IP9010_MOTOR IC

• BIOCK DIAGRAM



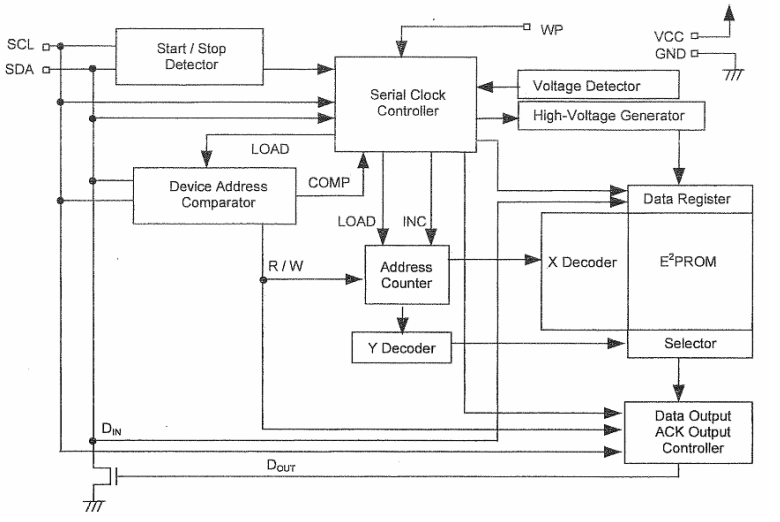
8. BU9543KV_MOTOR IC

• PIN CONFIGURATION

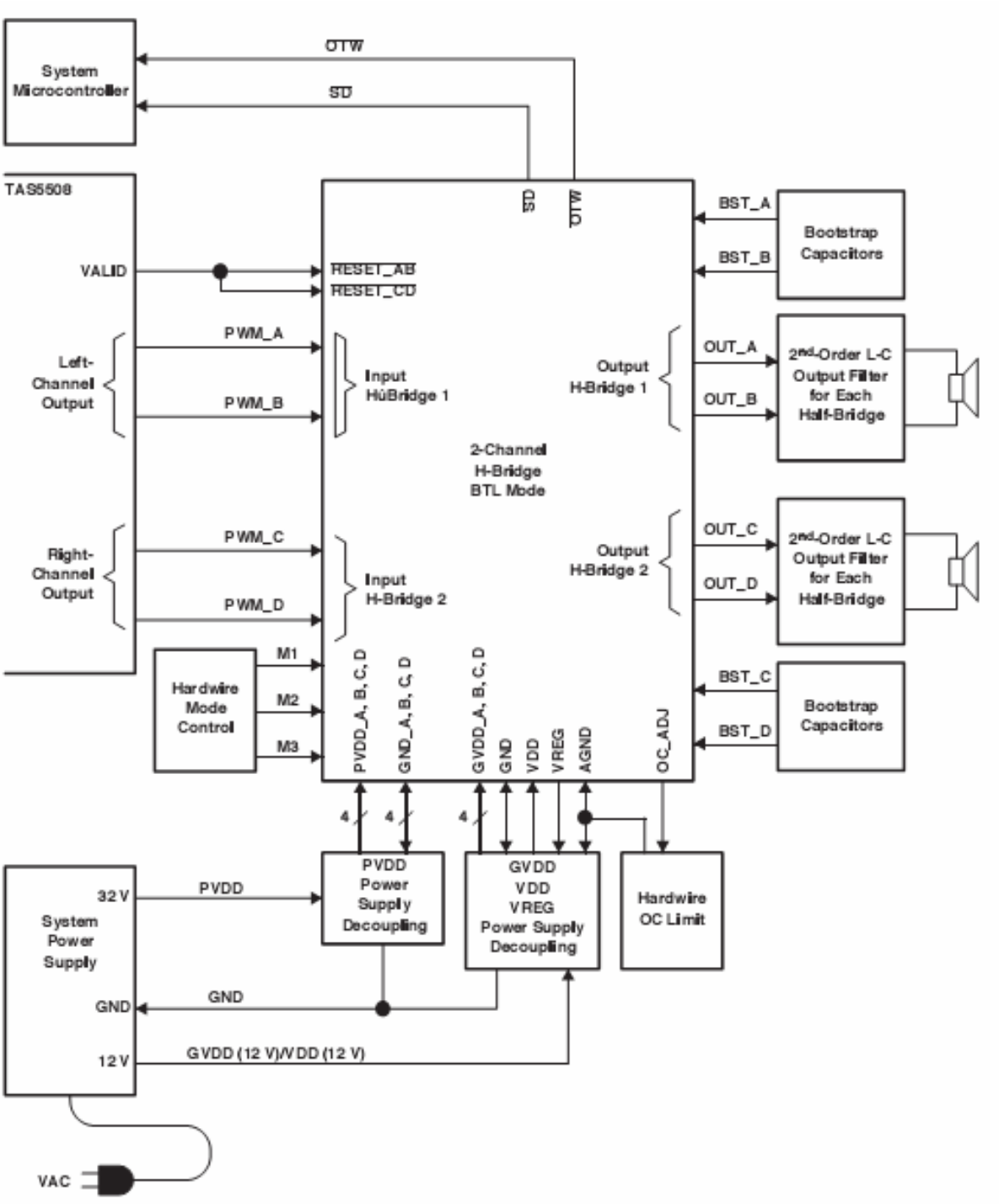


9. S-24CS16A01_EEPROM IC

• BIOCK DIAGRAM

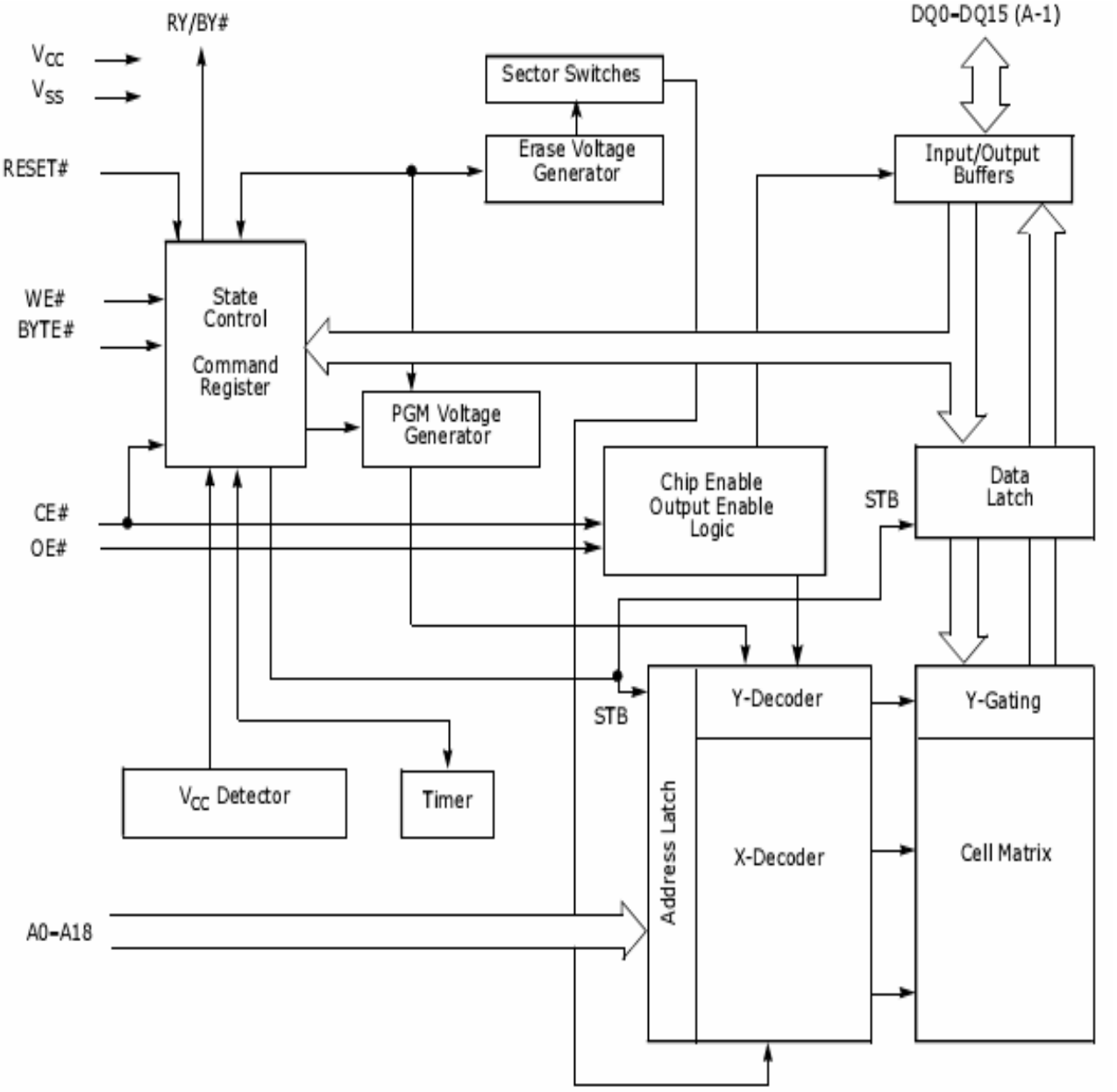


• SYSTEM BLOCK DIAGRAM



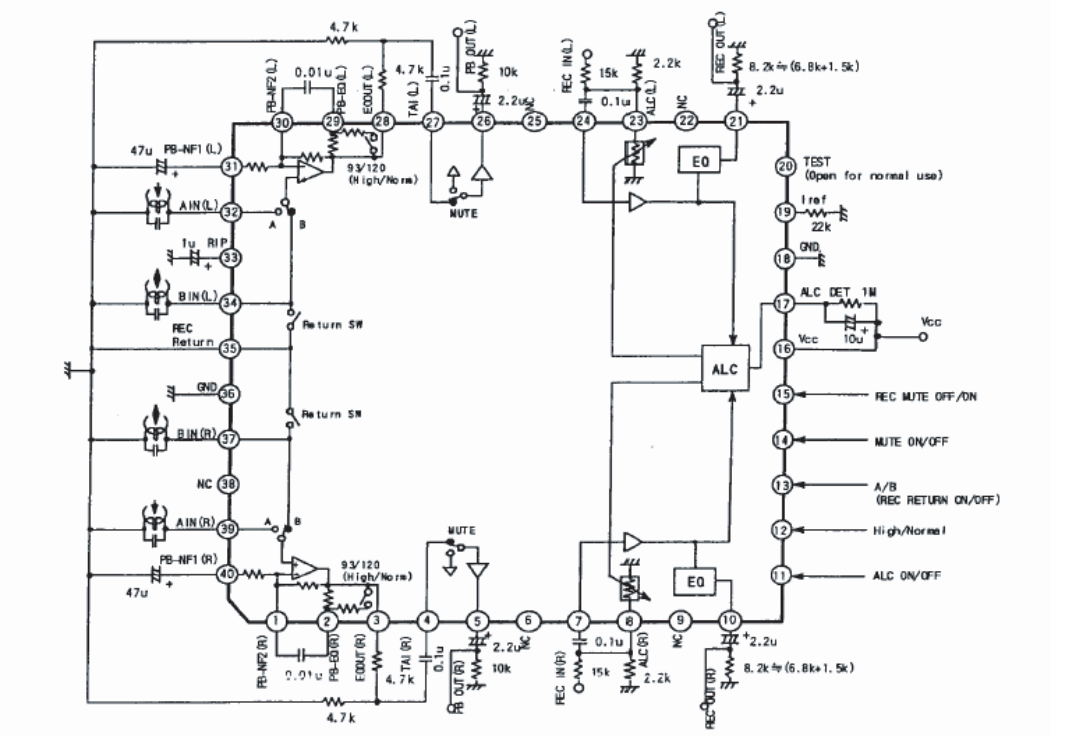
11. S29AL008D_FLASHIC

• FUNCTIONAL BLOCK DIAGRAM



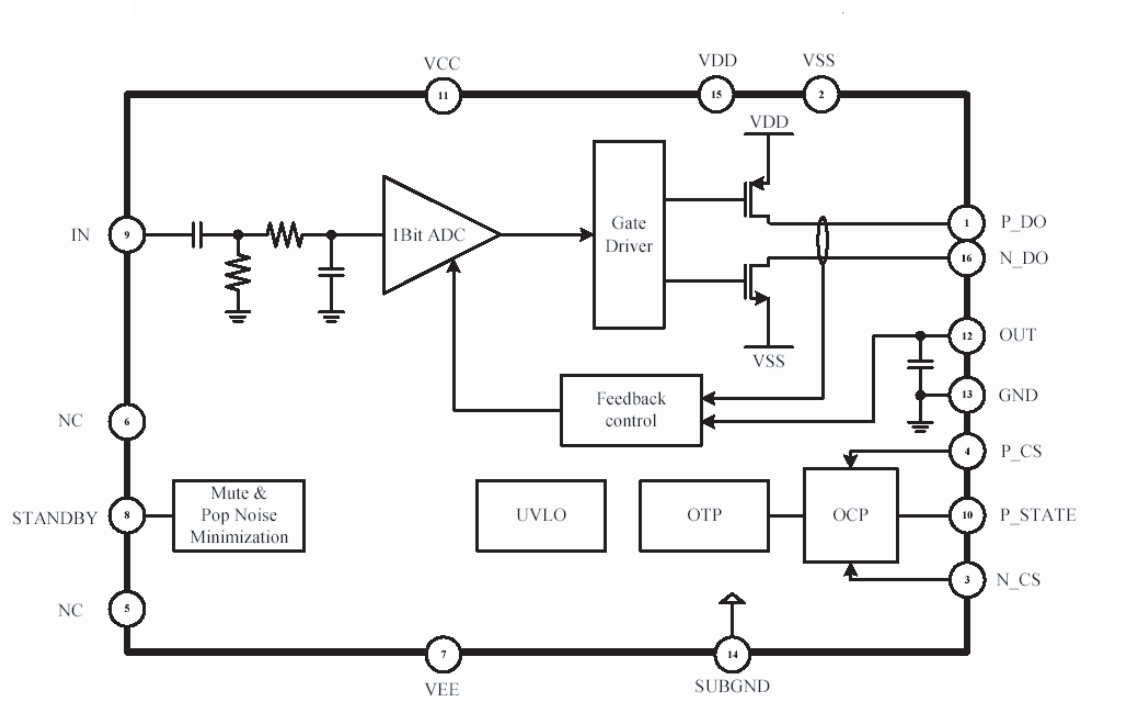
12. A12237_DECK IC

• BIOCK DIAGRAM



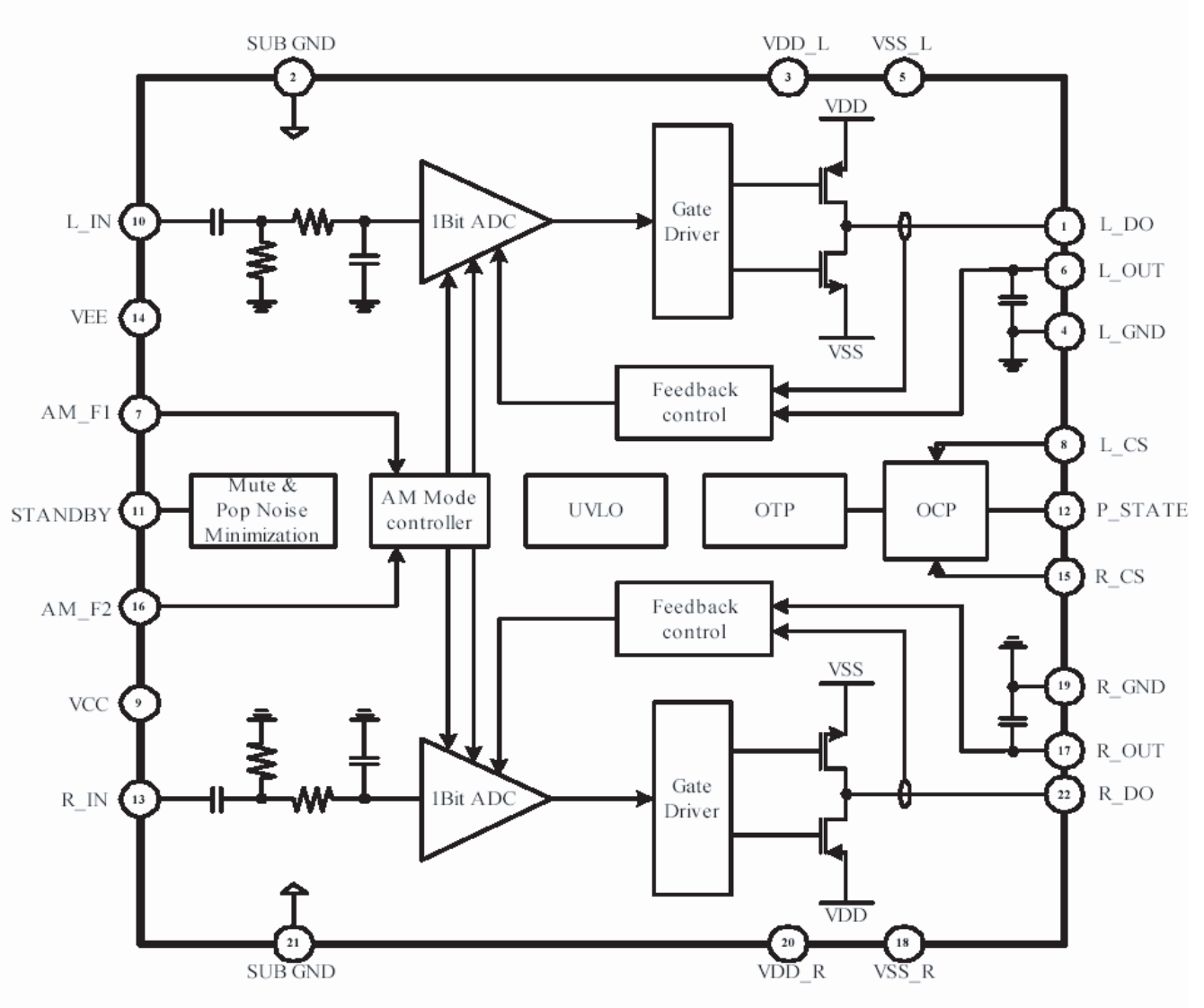
13. DF350W01FH_WOOFER AMP IC

• BIOCK DIAGRAM



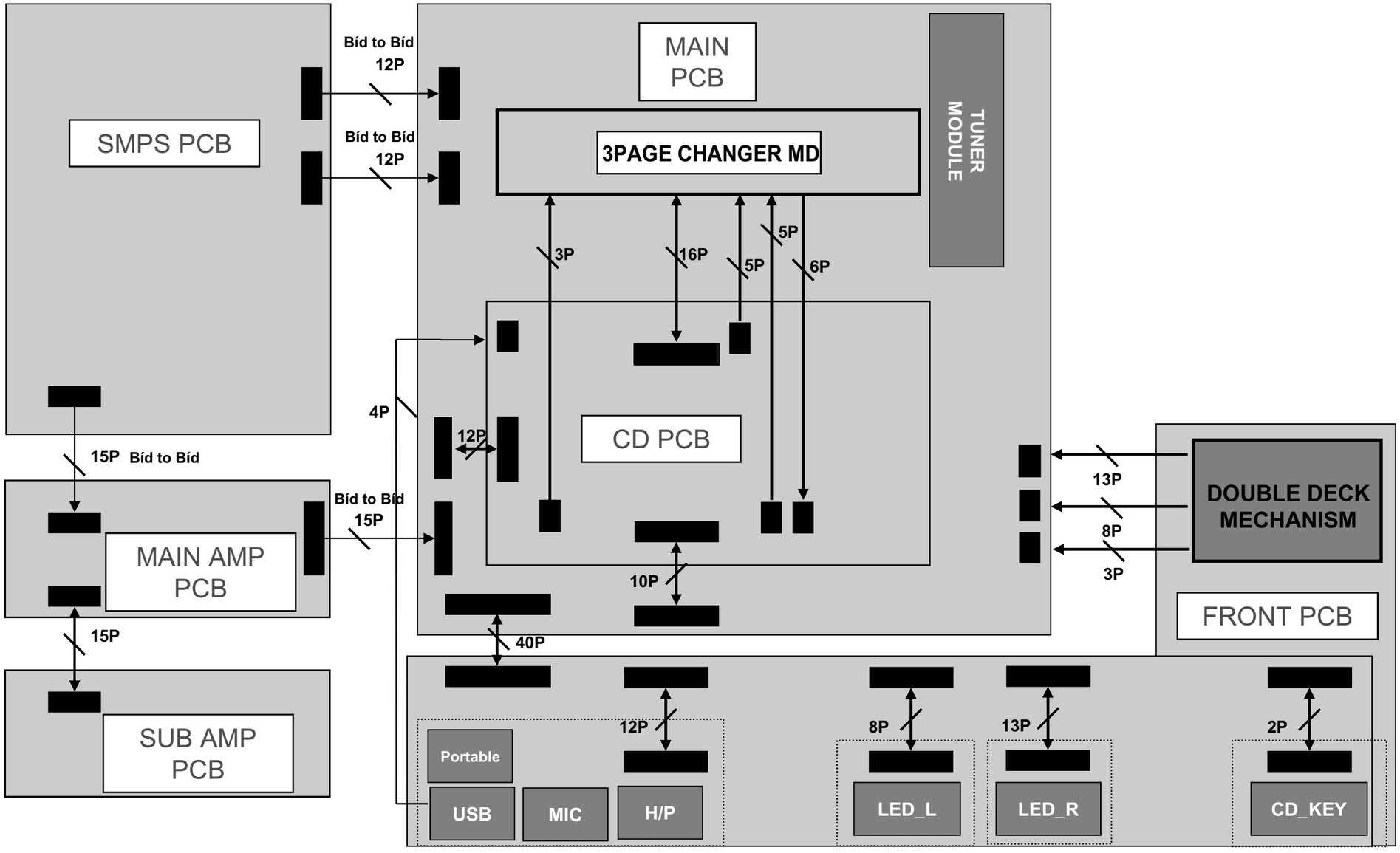
14. DF330W20FH_AMP IC

• BIOCK DIAGRAM



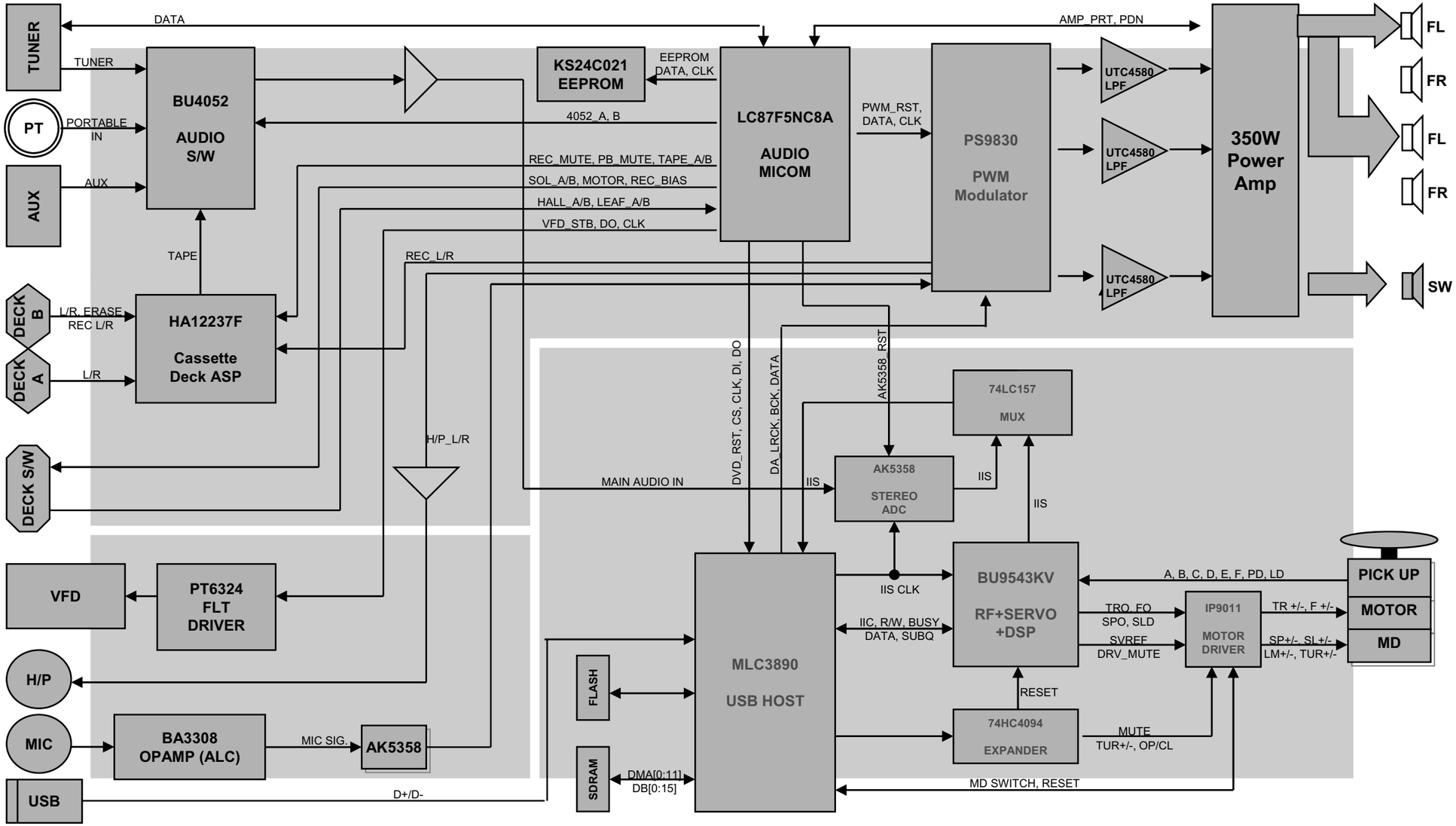
MEMO

❑ WIRING DIAGRAM

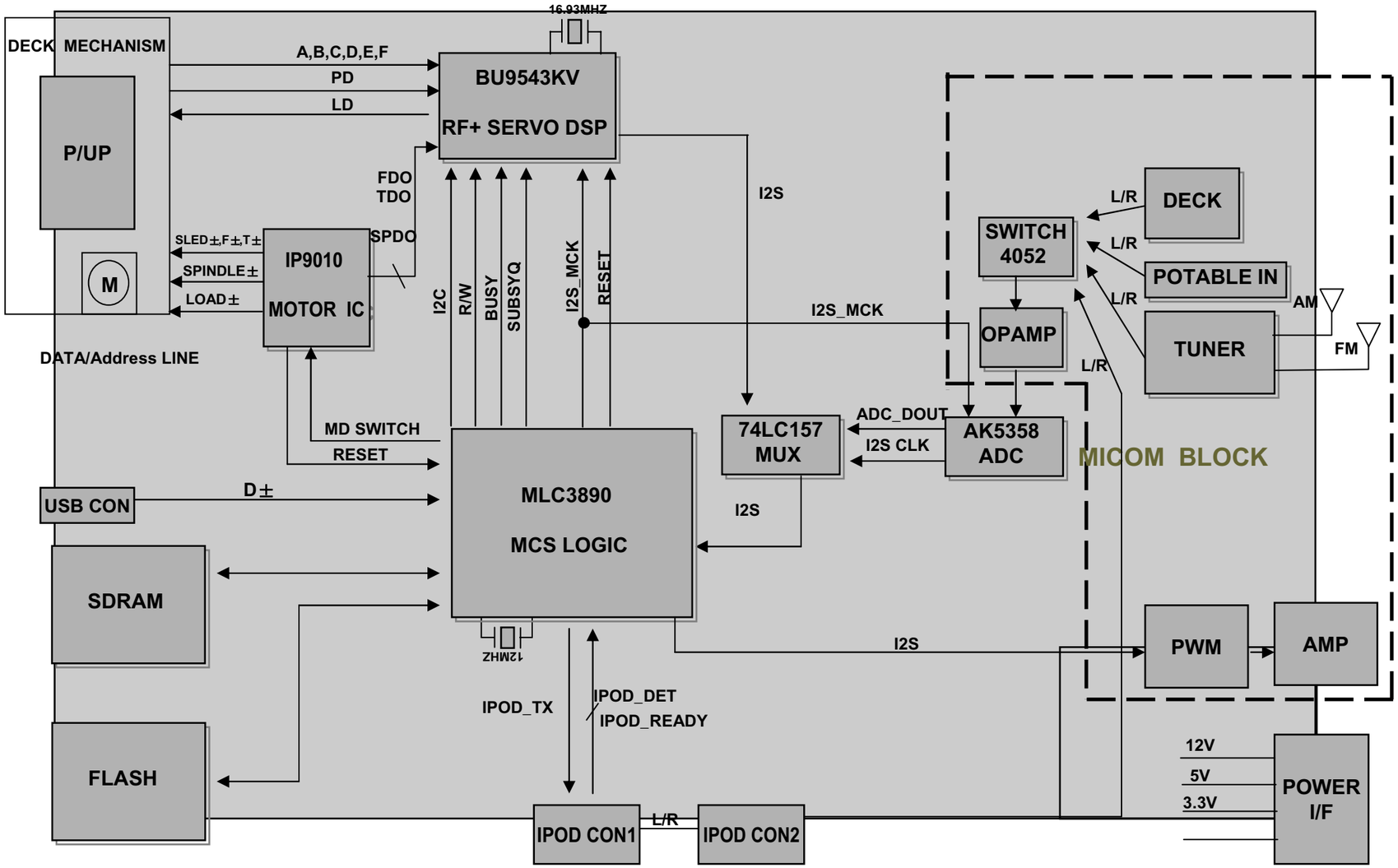


❑ BLOCK DIAGRAMS

1. MAIN & FRONT BLOCK DIAGRAM



2. CD BLOCK DIAGRAM



❑ SCHEMATIC DIAGRAMS

1. SMPS SCHEMATIC DIAGRAM

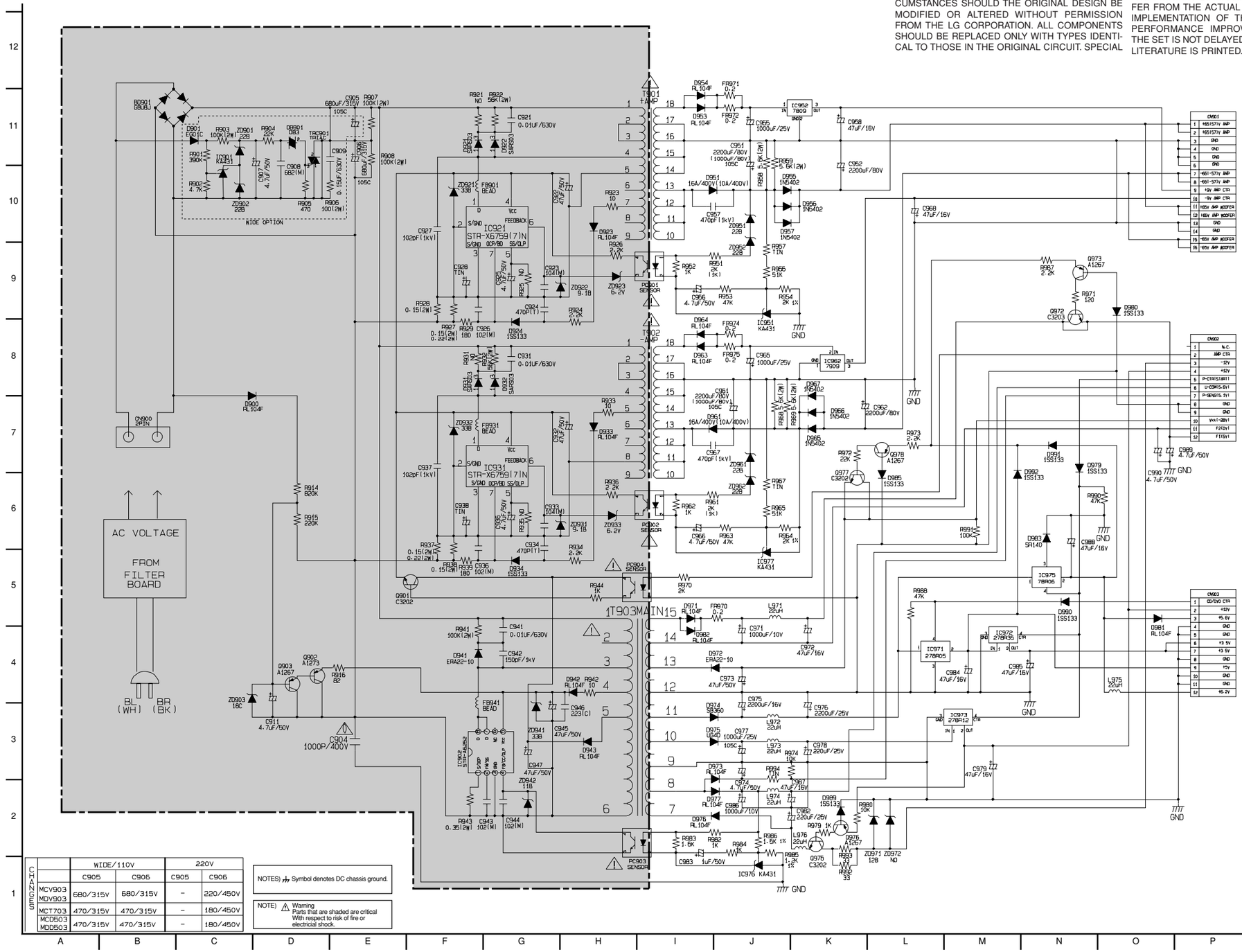
IMPORTANT SAFETY NOTICE

WHEN SERVICING THIS CHASSIS, UNDER NO CIRCUMSTANCES SHOULD THE ORIGINAL DESIGN BE MODIFIED OR ALTERED WITHOUT PERMISSION FROM THE LG CORPORATION. ALL COMPONENTS SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT. SPECIAL COMPONENTS ARE SHADED ON THE SCHEMATIC FOR EASY IDENTIFICATION.

THIS CIRCUIT DIAGRAM MAY OCCASIONALLY DIFFER FROM THE ACTUAL CIRCUIT USED. THIS WAY, IMPLEMENTATION OF THE LATEST SAFETY AND PERFORMANCE IMPROVEMENT CHANGES INTO THE SET IS NOT DELAYED UNTIL THE NEW SERVICE LITERATURE IS PRINTED.

NOTE :

1. Shaded(▩) parts are critical for safety. Replace only with specified part number.
2. Voltages are DC-measured with a digital voltmeter during Play mode.



CHASSIS		WIDE/110V		220V	
		C905	C906	C905	C906
	MCV903	680/315V	680/315V	-	220/450V
	MDV903				
	MCT703	470/315V	470/315V	-	180/450V
	MCD503	470/315V	470/315V	-	180/450V
	MDD503				

NOTES) ⏚ Symbol denotes DC chassis ground.

NOTE) ⚠ Warning
Parts that are shaded are critical
With respect to risk of fire or
electricial shock.

SCHEMATIC(SMPS-WIDE)
MCV903/MCT703/MCD503 SERIES

EBY32768502

2008.01.25

2. SMPS SUB SCHEMATIC DIAGRAM

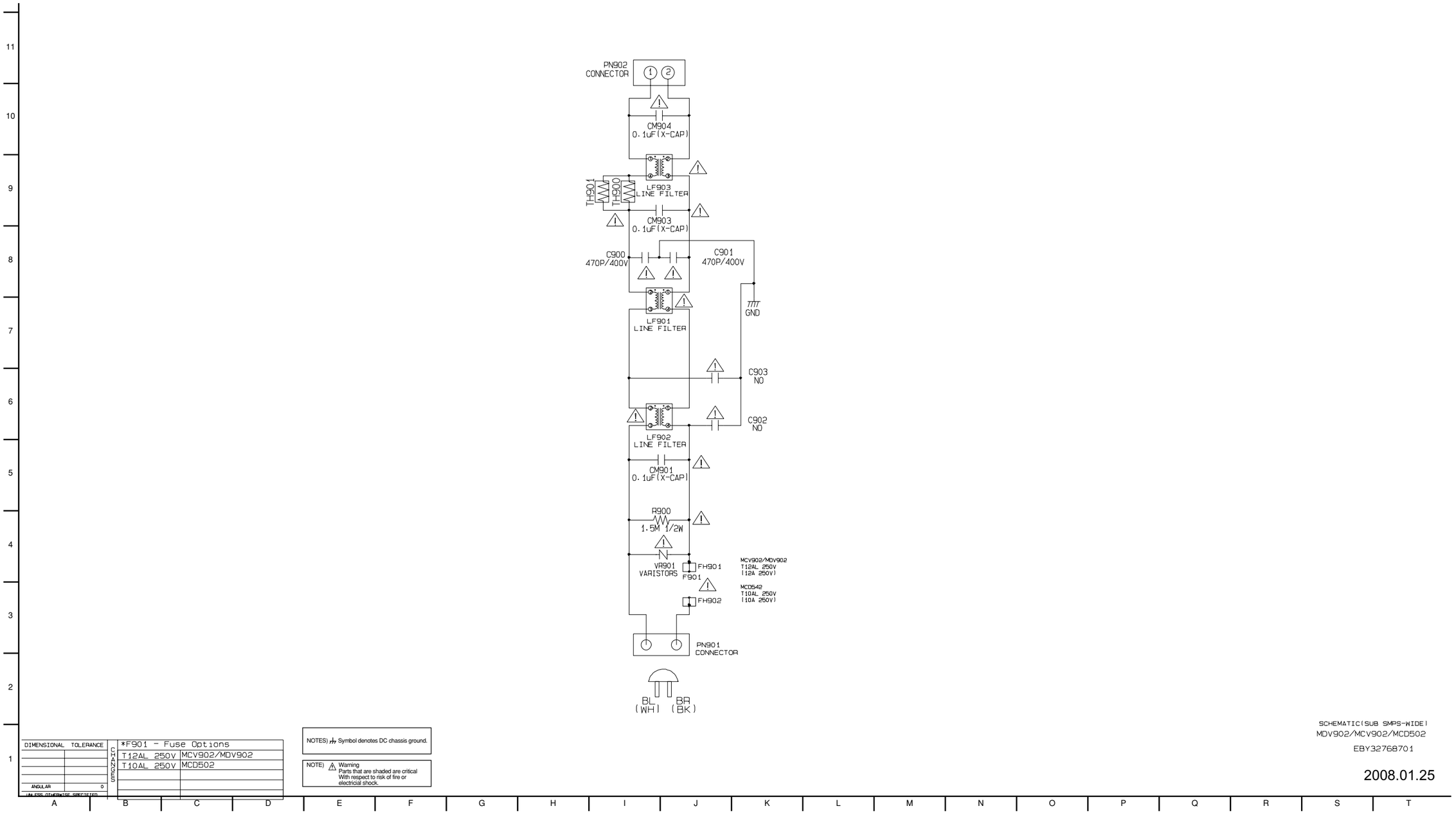
IMPORTANT SAFETY NOTICE

WHEN SERVICING THIS CHASSIS, UNDER NO CIRCUMSTANCES SHOULD THE ORIGINAL DESIGN BE MODIFIED OR ALTERED WITHOUT PERMISSION FROM THE LG CORPORATION. ALL COMPONENTS SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN THE ORIGINAL CIRCUIT. SPECIAL COMPONENTS ARE SHADED ON THE SCHEMATIC FOR EASY IDENTIFICATION.

THIS CIRCUIT DIAGRAM MAY OCCASIONALLY DIFFER FROM THE ACTUAL CIRCUIT USED. THIS WAY, IMPLEMENTATION OF THE LATEST SAFETY AND PERFORMANCE IMPROVEMENT CHANGES INTO THE SET IS NOT DELAYED UNTIL THE NEW SERVICE LITERATURE IS PRINTED.

NOTE :

1. Shaded(▩) parts are critical for safety. Replace only with specified part number.
2. Voltages are DC-measured with a digital voltmeter during Play mode.



DIMENSIONAL	TOLERANCE
ANGULAR	0

UNLESS OTHERWISE SPECIFIED

CHANGED

*F901 - Fuse Options	
T12AL 250V	MCV902/MDV902
T10AL 250V	MCD502

NOTES) ⏚ Symbol denotes DC chassis ground.

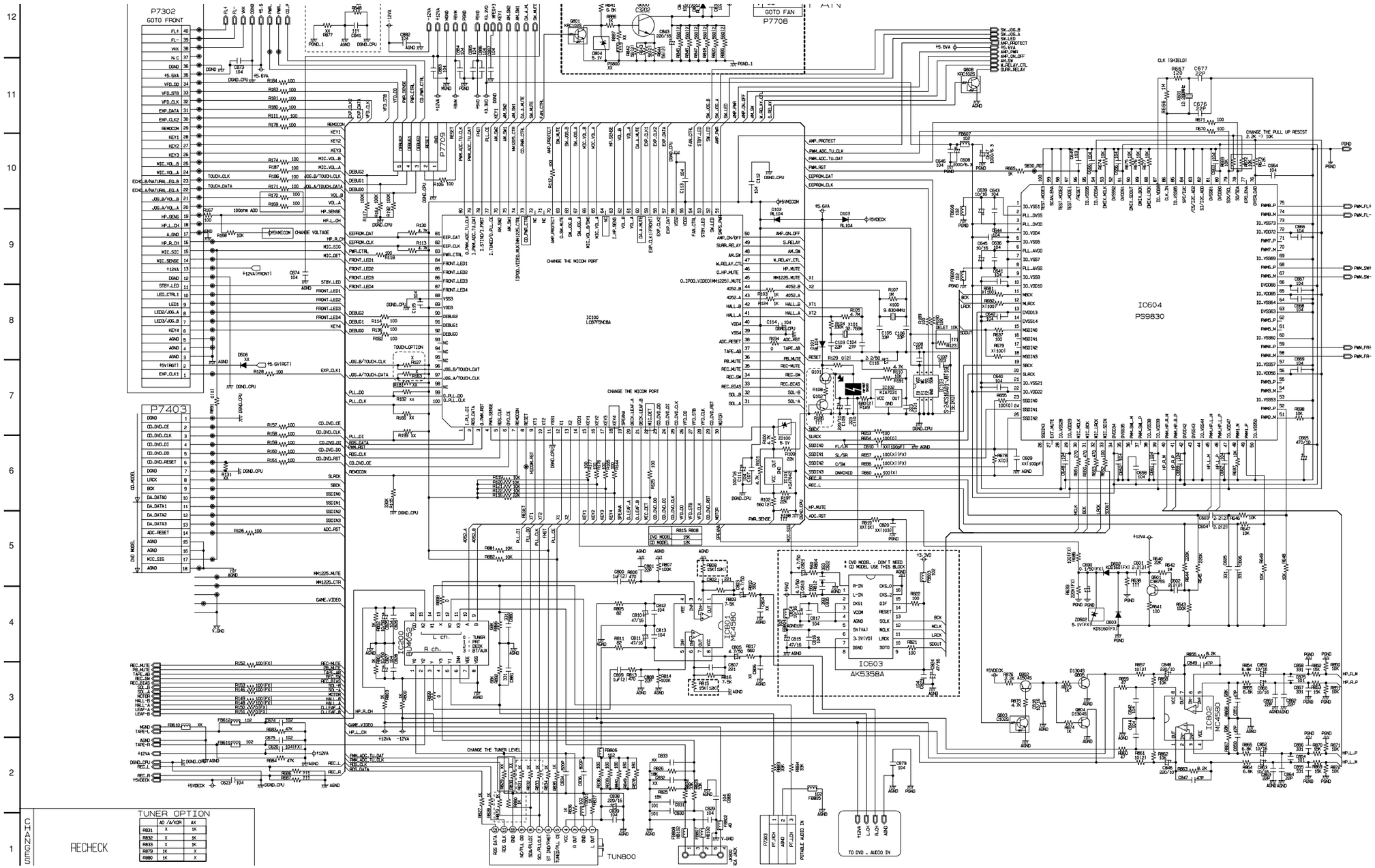
NOTE) ⚠ Warning
Parts that are shaded are critical
With respect to risk of fire or
electricial shock.

SCHEMATIC(SUB SMPS-WIDE)
MDV902/MCV902/MCD502

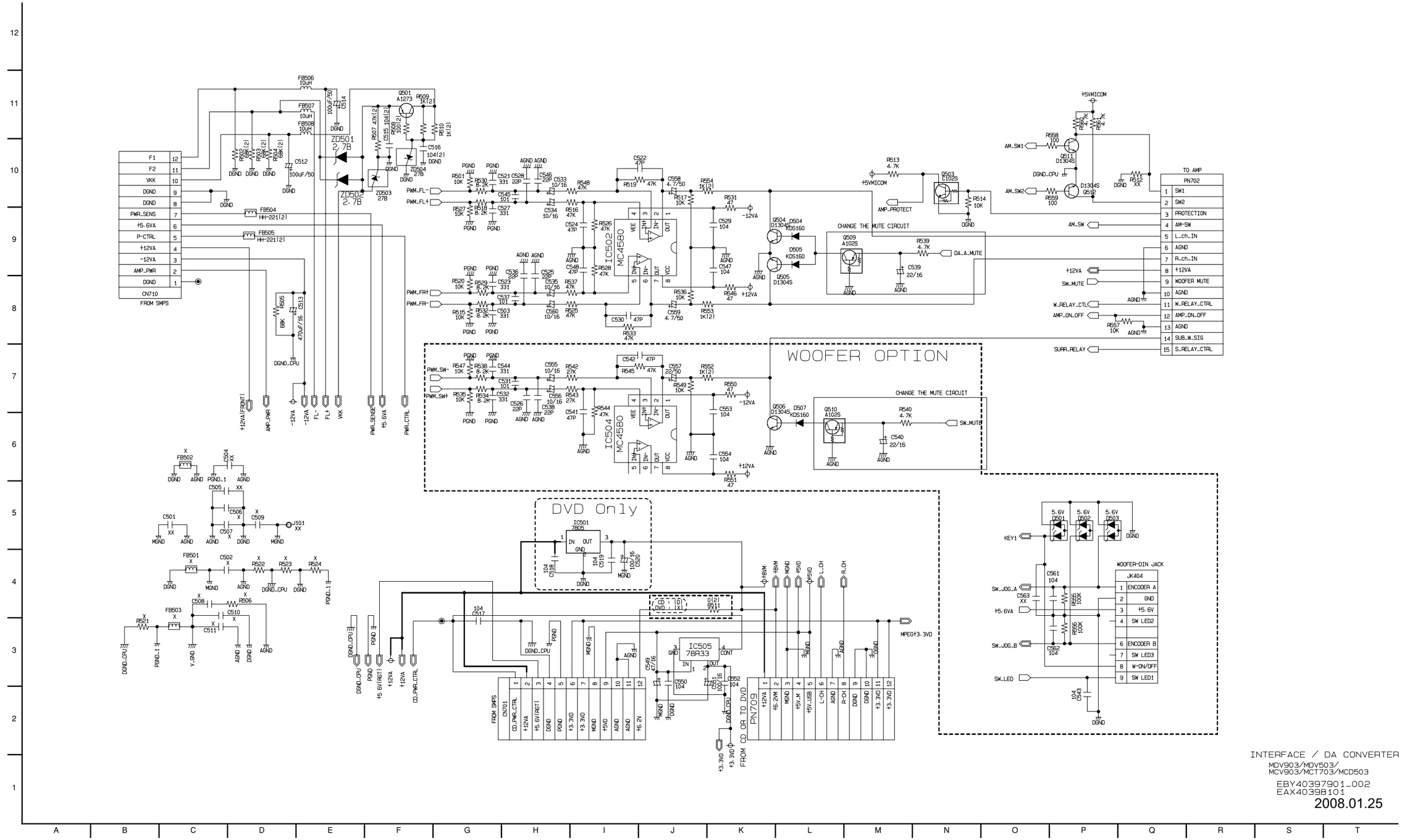
EBY32768701

2008.01.25

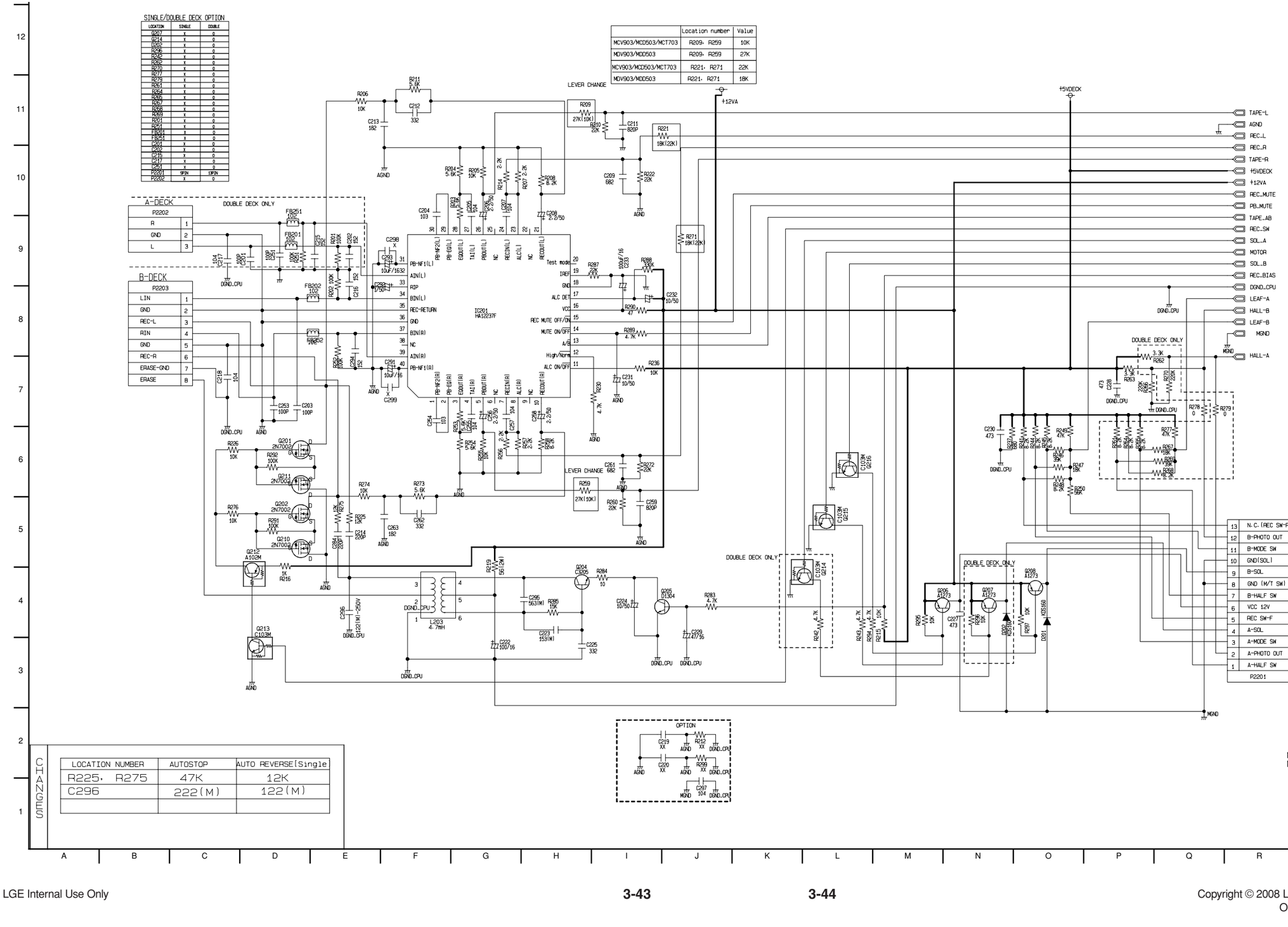
3. MICOM SCHEMATIC DIAGRAM



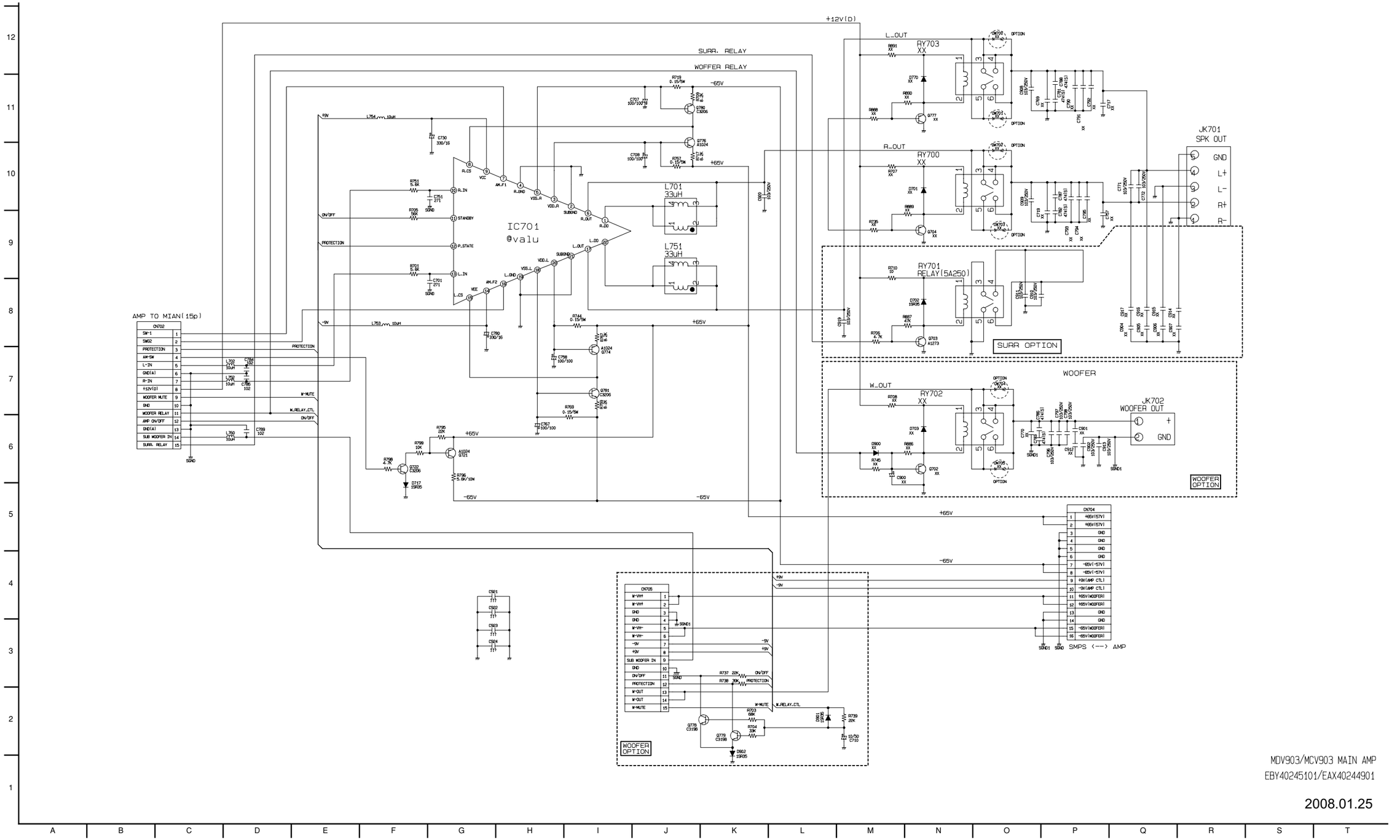
4. INTERFACE SCHEMATIC DIAGRAM



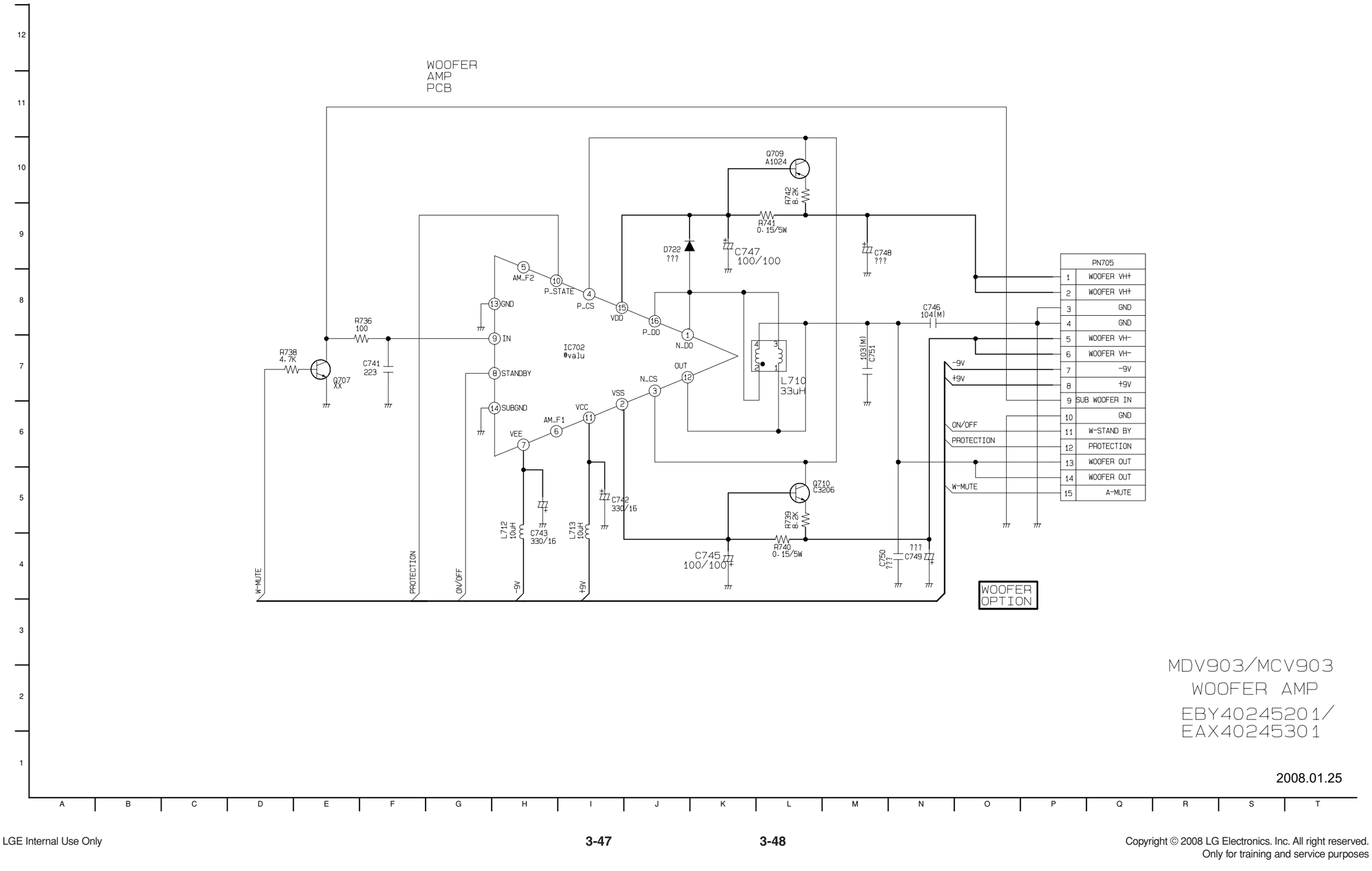
5. DECK SCHEMATIC DIAGRAM



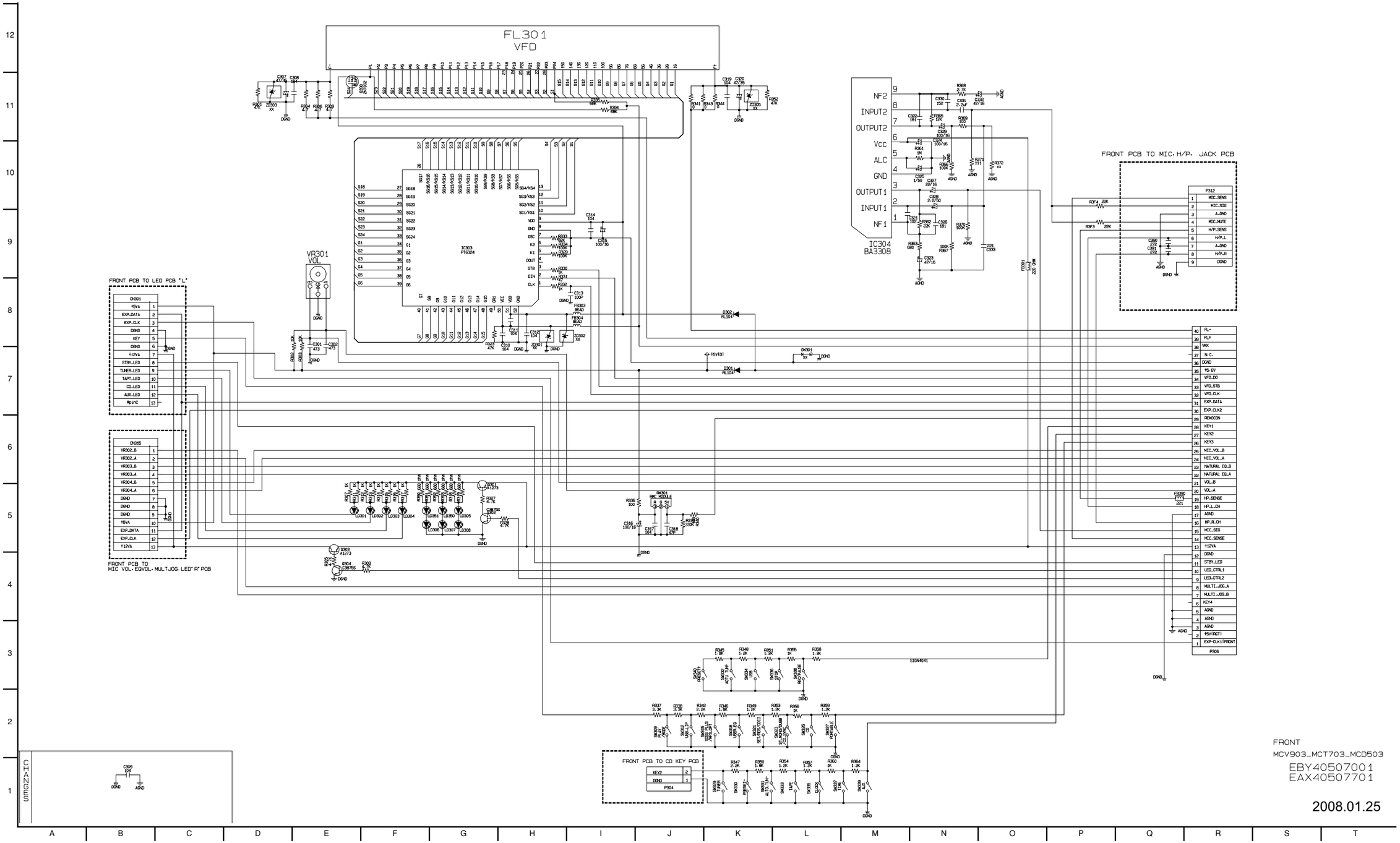
6. MAIN AMP SCHEMATIC DIAGRAM



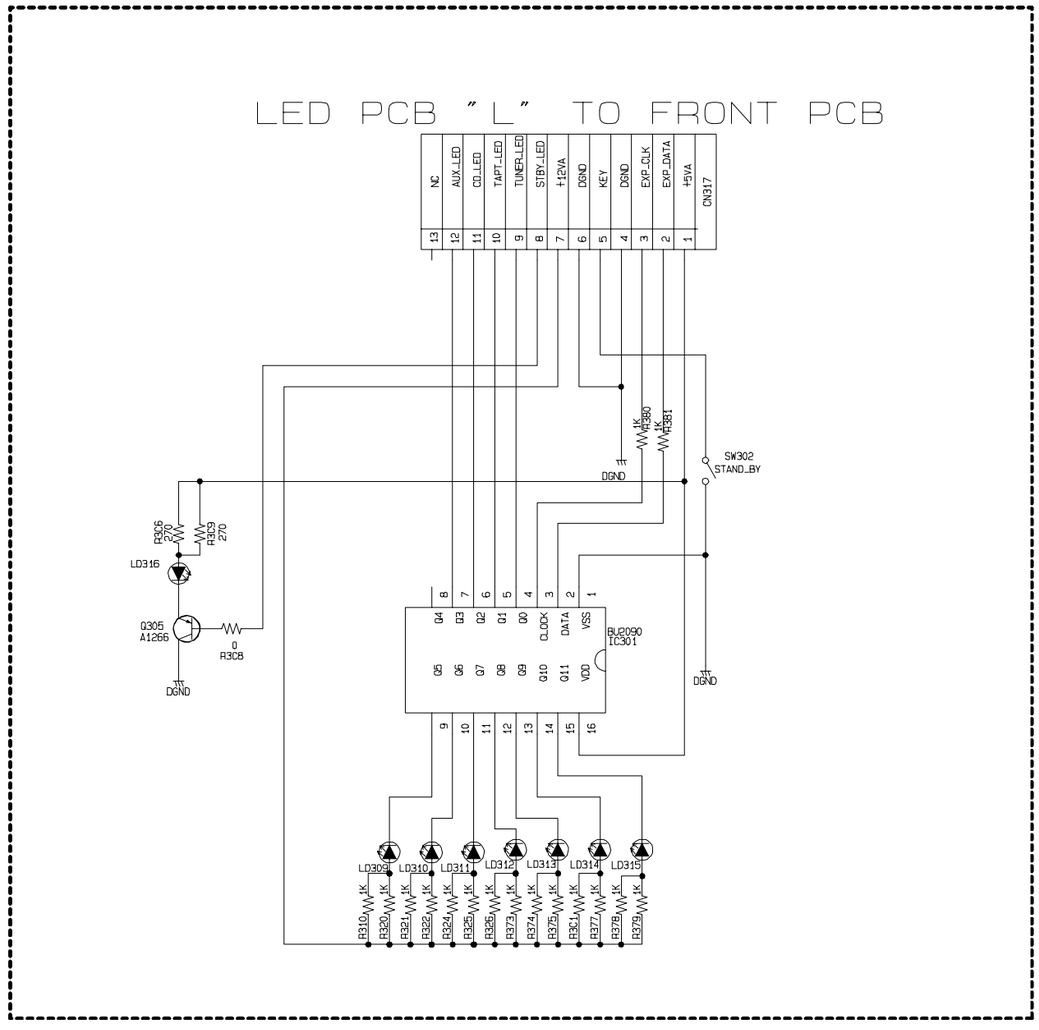
7. WOOFER AMP SCHEMATIC DIAGRAM



8. FRONT SCHEMATIC DIAGRAM



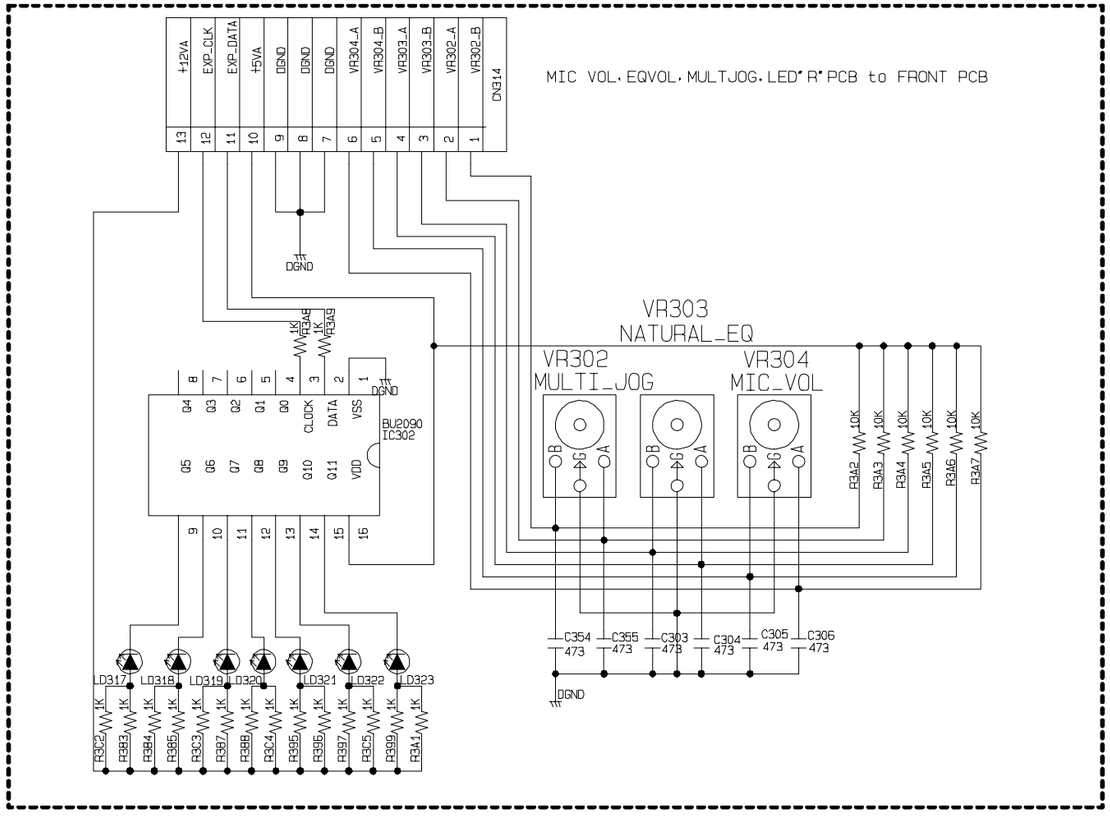
9. LED_L SCHEMATIC DIAGRAM



FRONT_LED_L
MCV903_MCT703_MCD503
EBY40507201
EAX40507801

2008.01.25

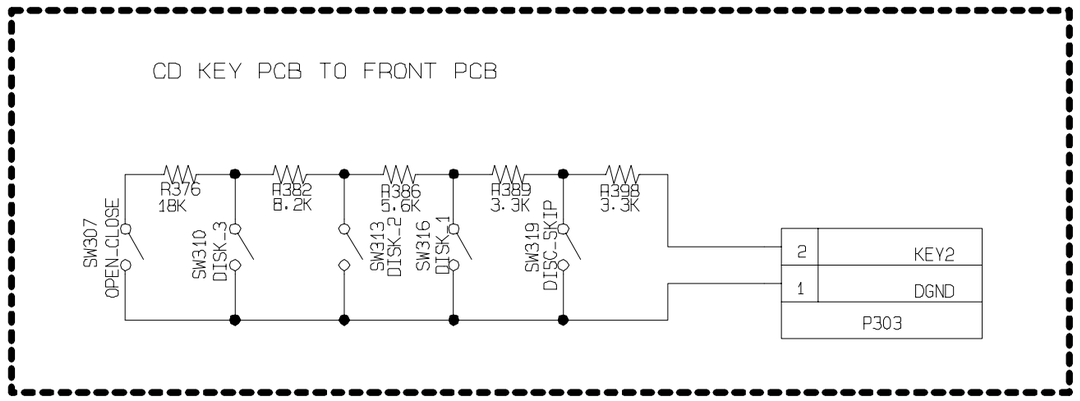
10. LED_R SCHEMATIC DIAGRAM



LED_R AND JOG VOL
MDV903_MCT703_MCD503
EBY40507301
EAX40507901

2008.01.25

11. CD-KEY SCHEMATIC DIAGRAM



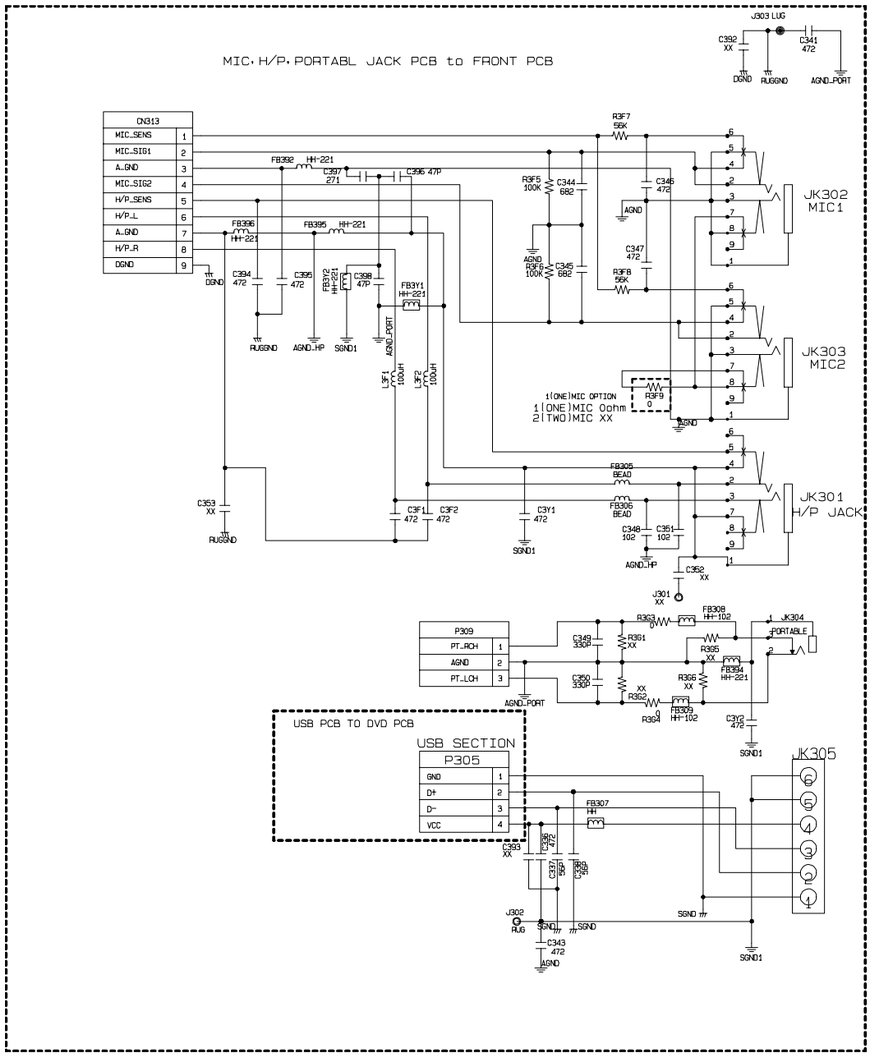
FRONT_CD_KEY

MCV903_MCT703_MCD503

EBY40507401
EAX40508001

2008.01.25

12. MIC/HP/PT SCHEMATIC DIAGRAM



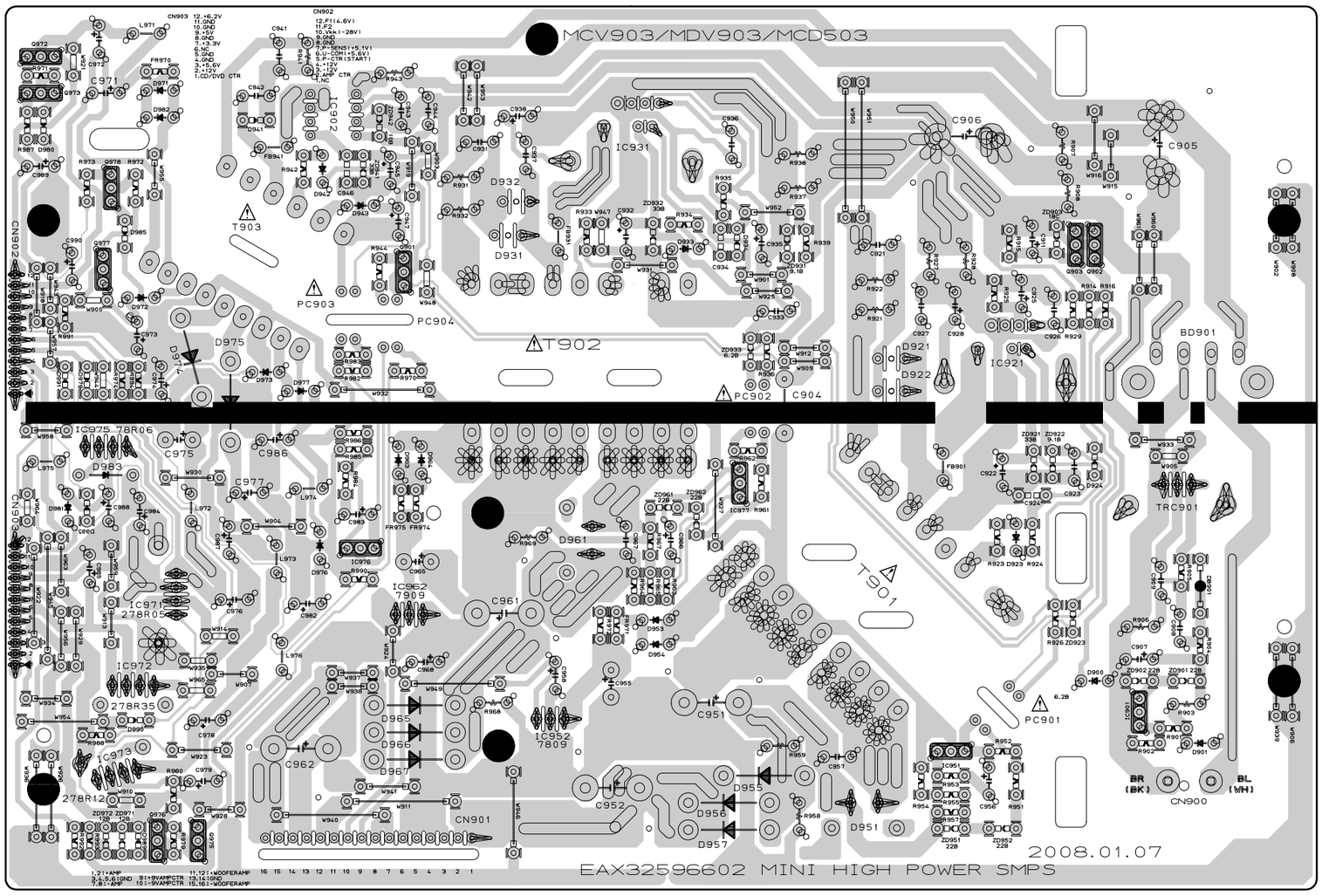
FRONT_MIC_HP_USB_POTABLE
MCV903_MCT703_MCD503
EBY40507501
EAX40508101

2008.01.25

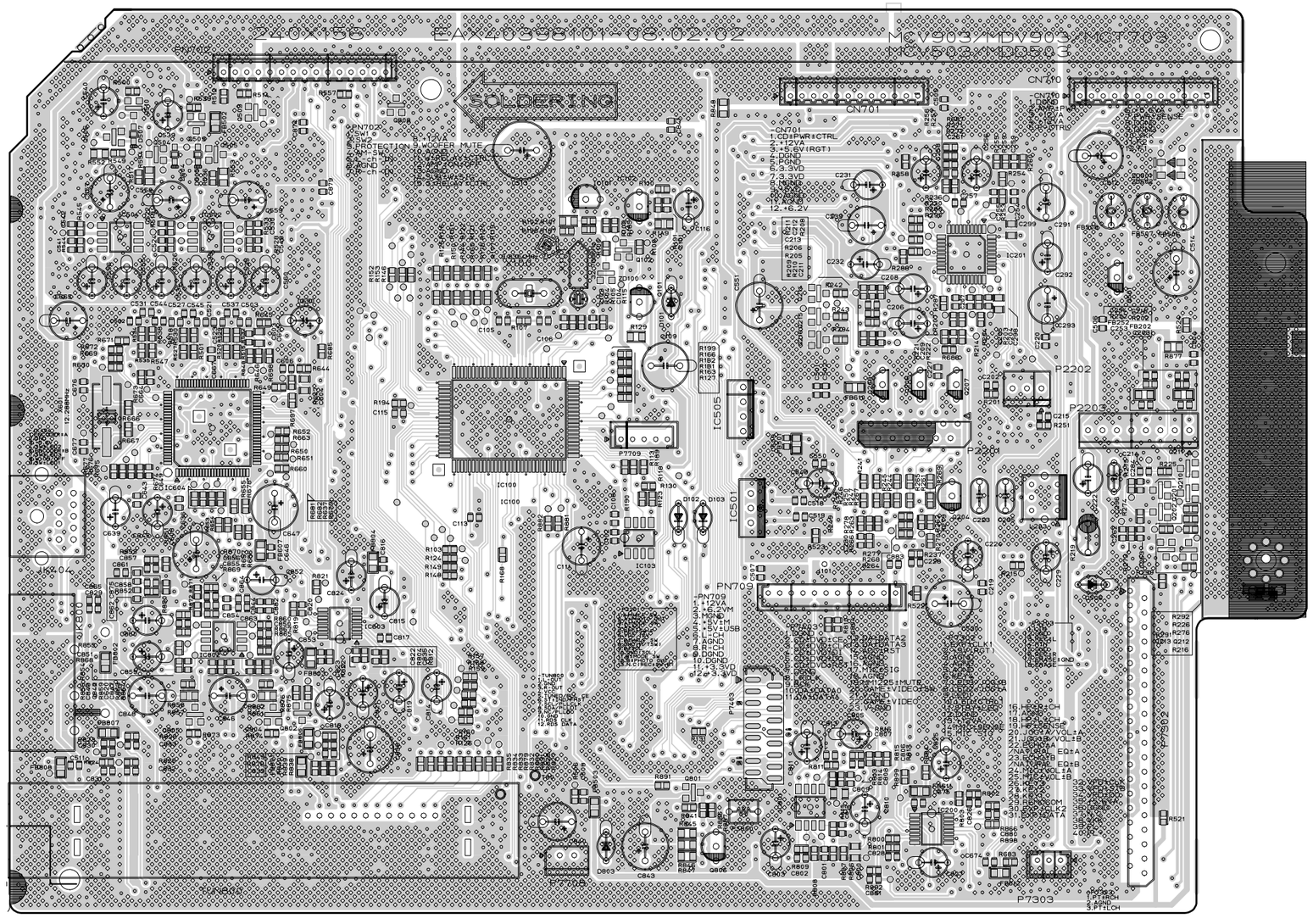
❑ PRINTED CIRCUIT BOARD DIAGRAMS

1. SMPS P.C. BOARD DIAGRAM

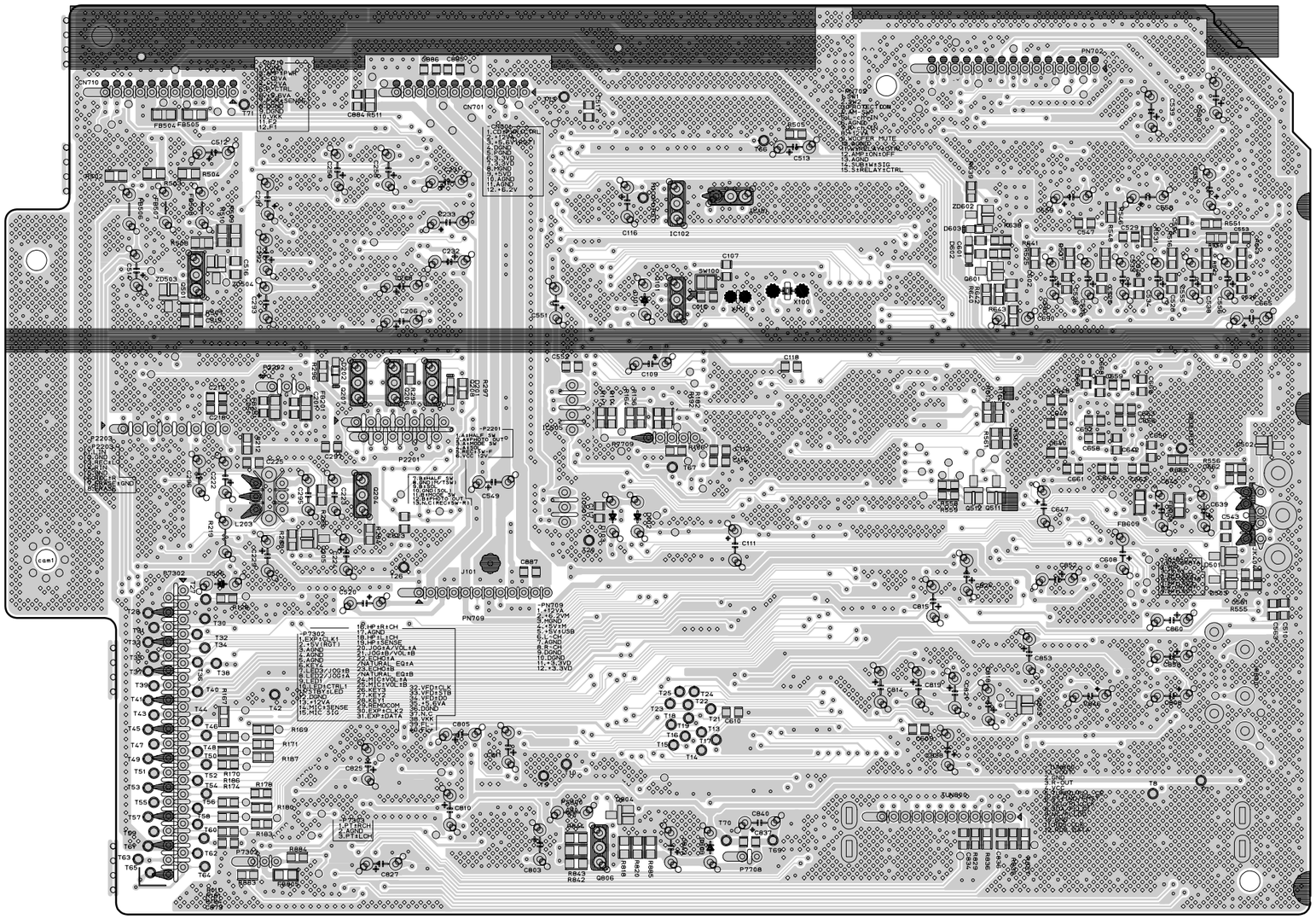
NOTE: Warning
⚠ Parts that are shaded are critical With respect to risk of fire or electrical shock.



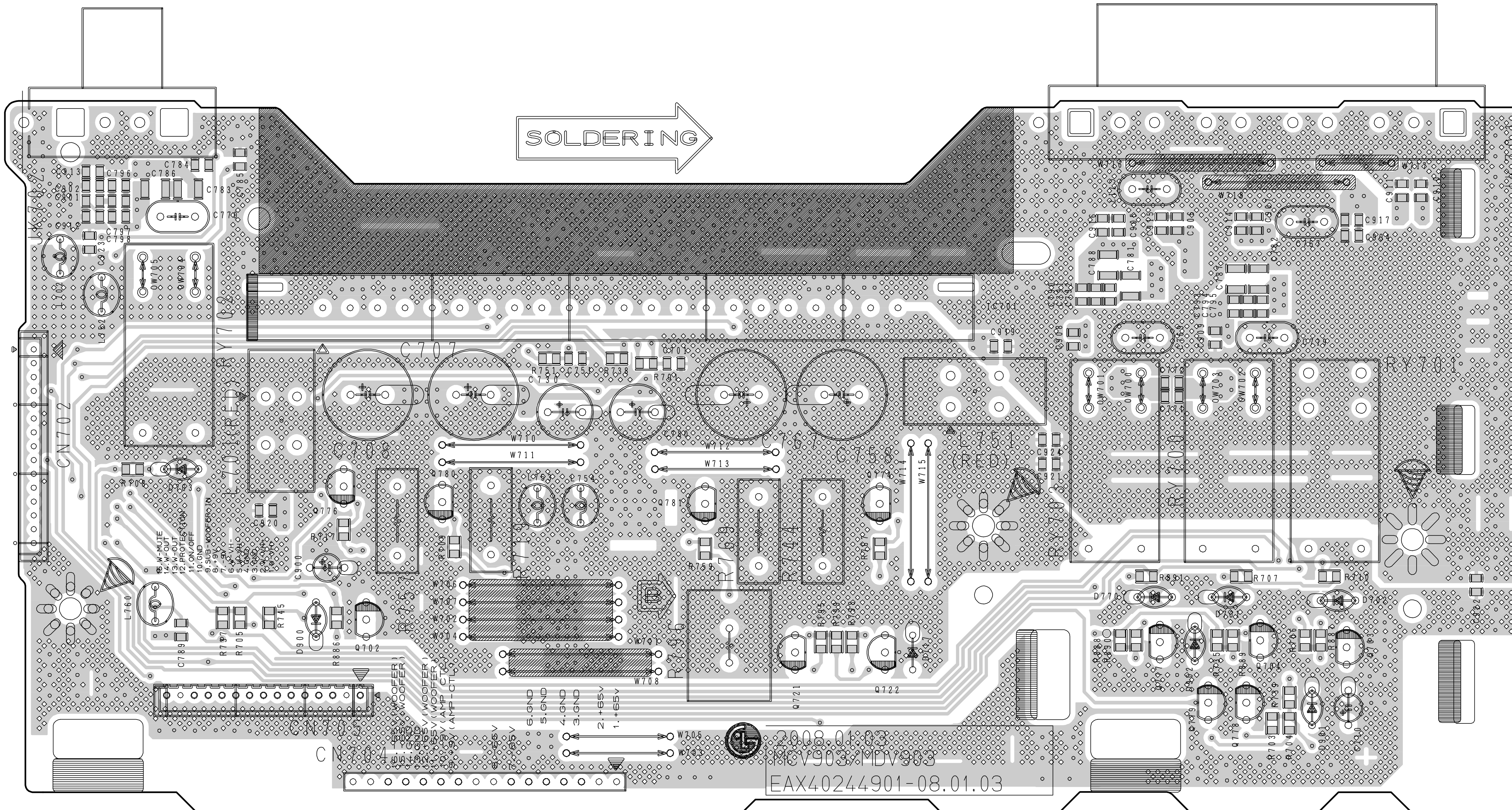
2. MAIN P.C. BOARD DIAGRAM (TOP VIEW)



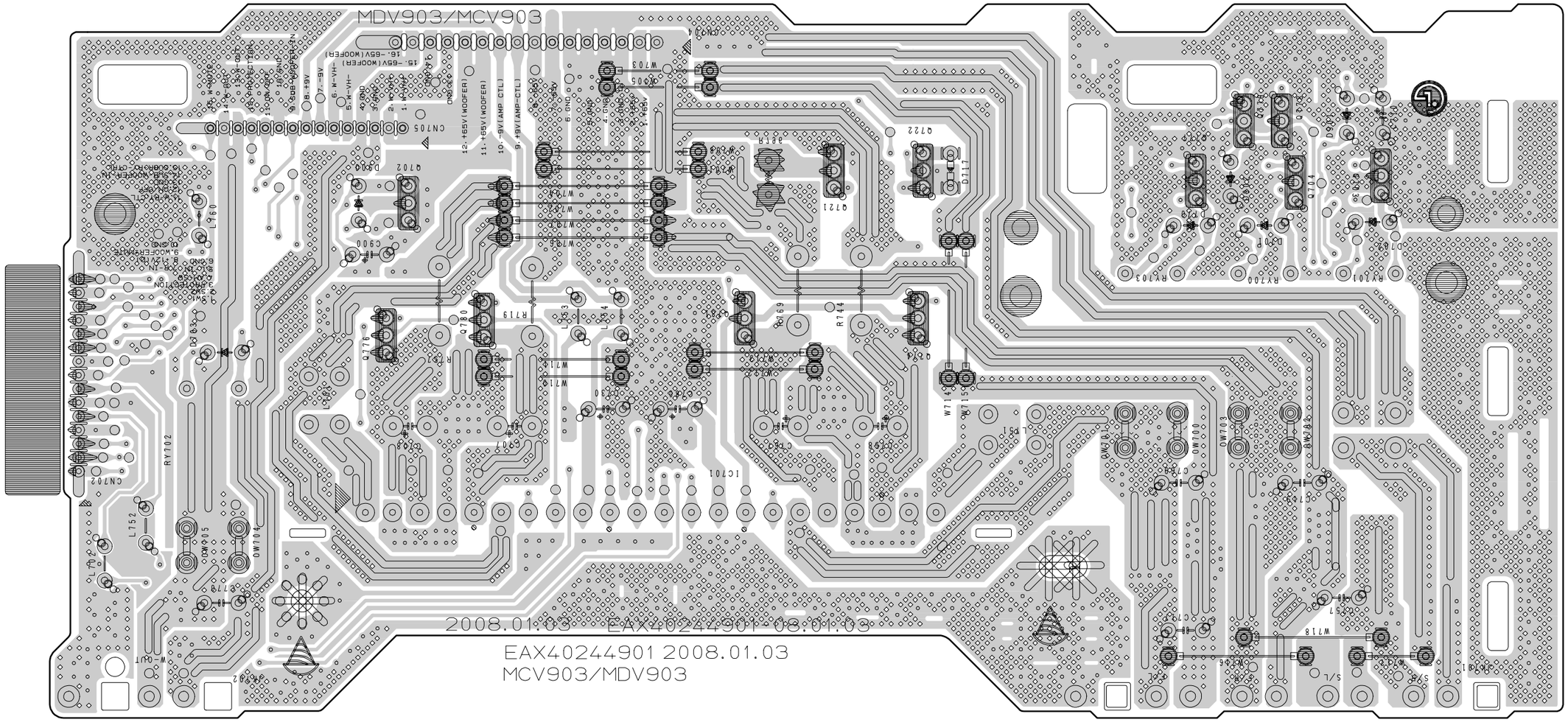
2-1. MAIN P.C. BOARD DIAGRAM (BOTTOM VIEW)



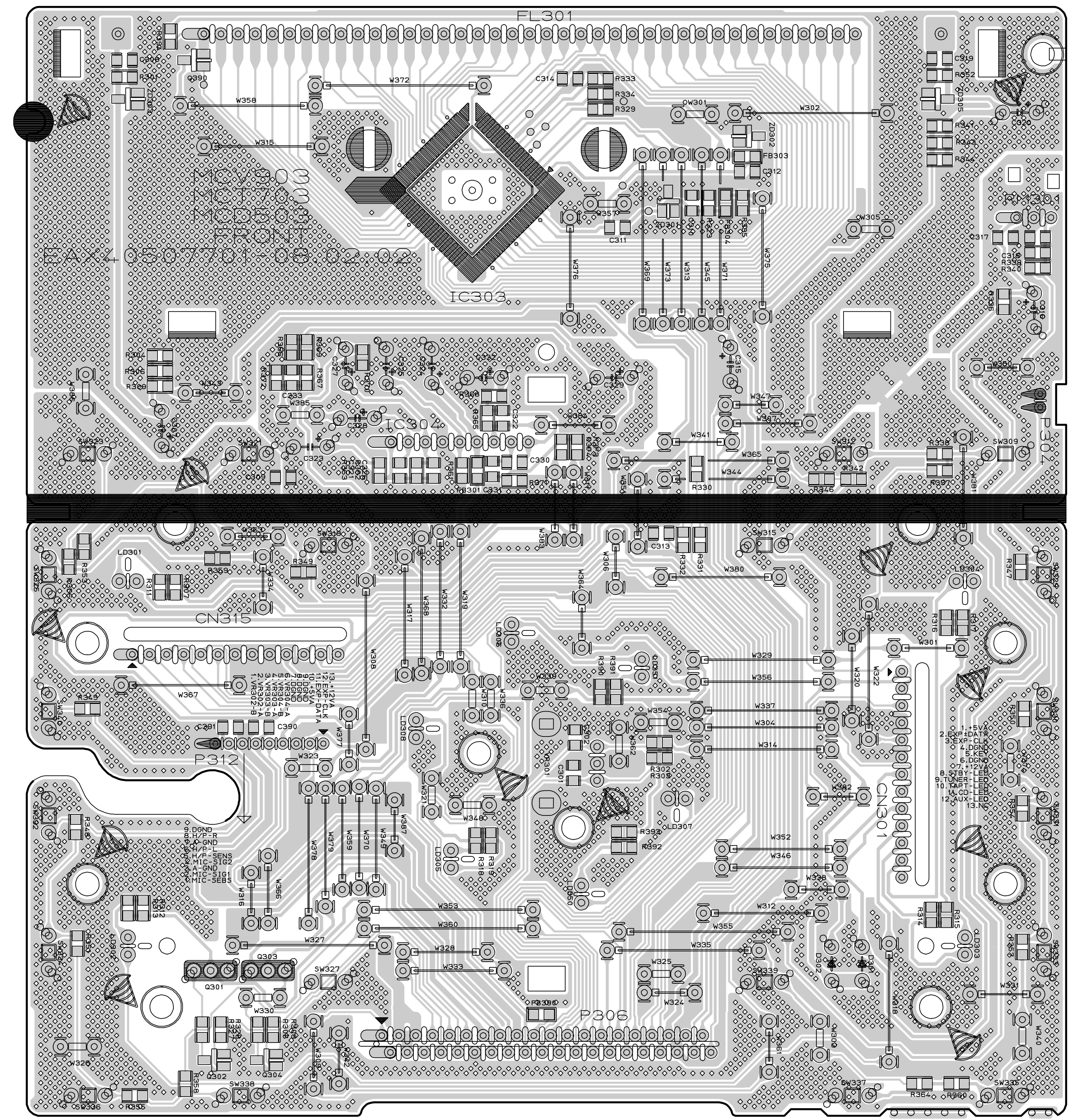
3-1. MAIN AMP P.C. BOARD DIAGRAM (TOP VIEW)



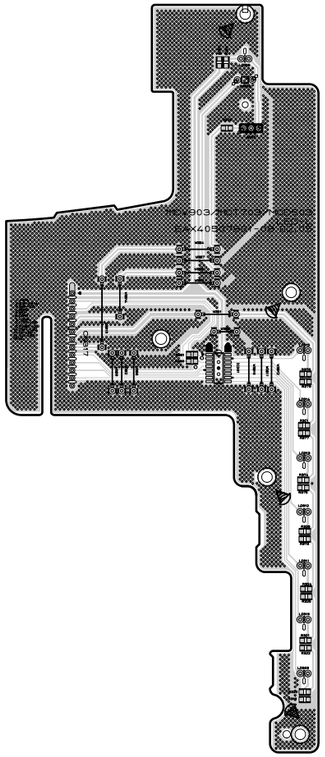
3-2. MAIN AMP P.C. BOARD DIAGRAM (BOTTOM VIEW)



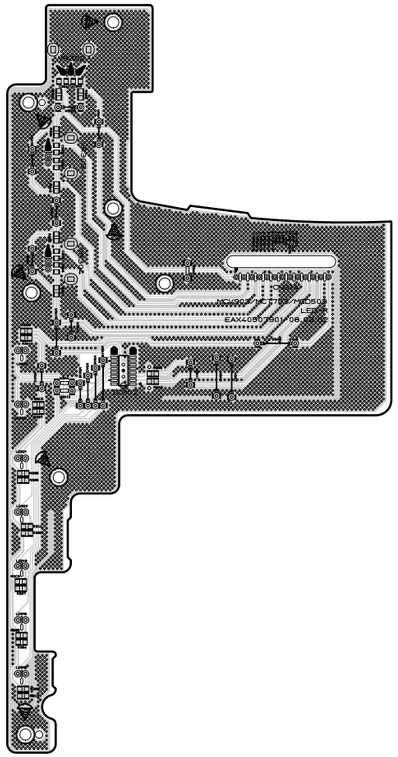
4. FRONT P.C. BOARD DIAGRAM



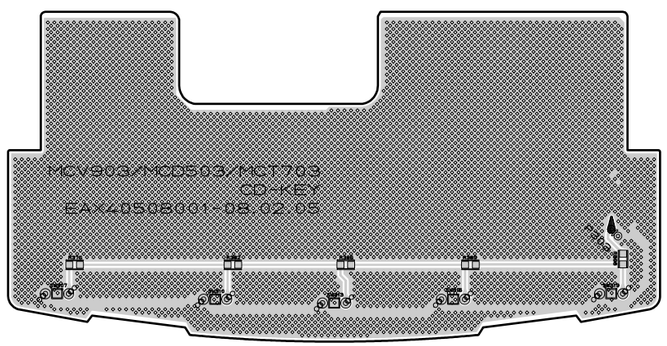
5-1. LED-L P.C. BOARD DIAGRAM



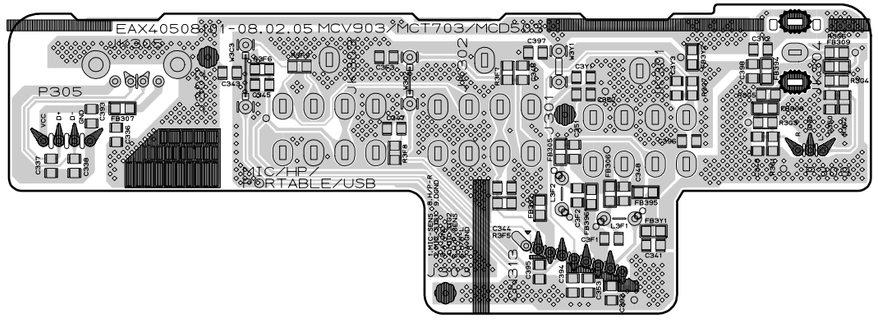
5-2. LED-R P.C. BOARD DIAGRAM



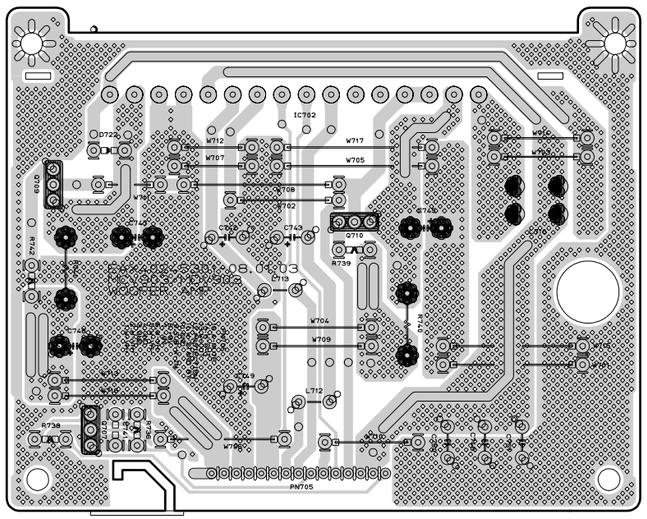
6. CD-KEY P.C. BOARD DIAGRAM



7. MIC/HP/PT P.C. BOARD DIAGRAM



8. WOOFER AMP P.C. BOARD DIAGRAM



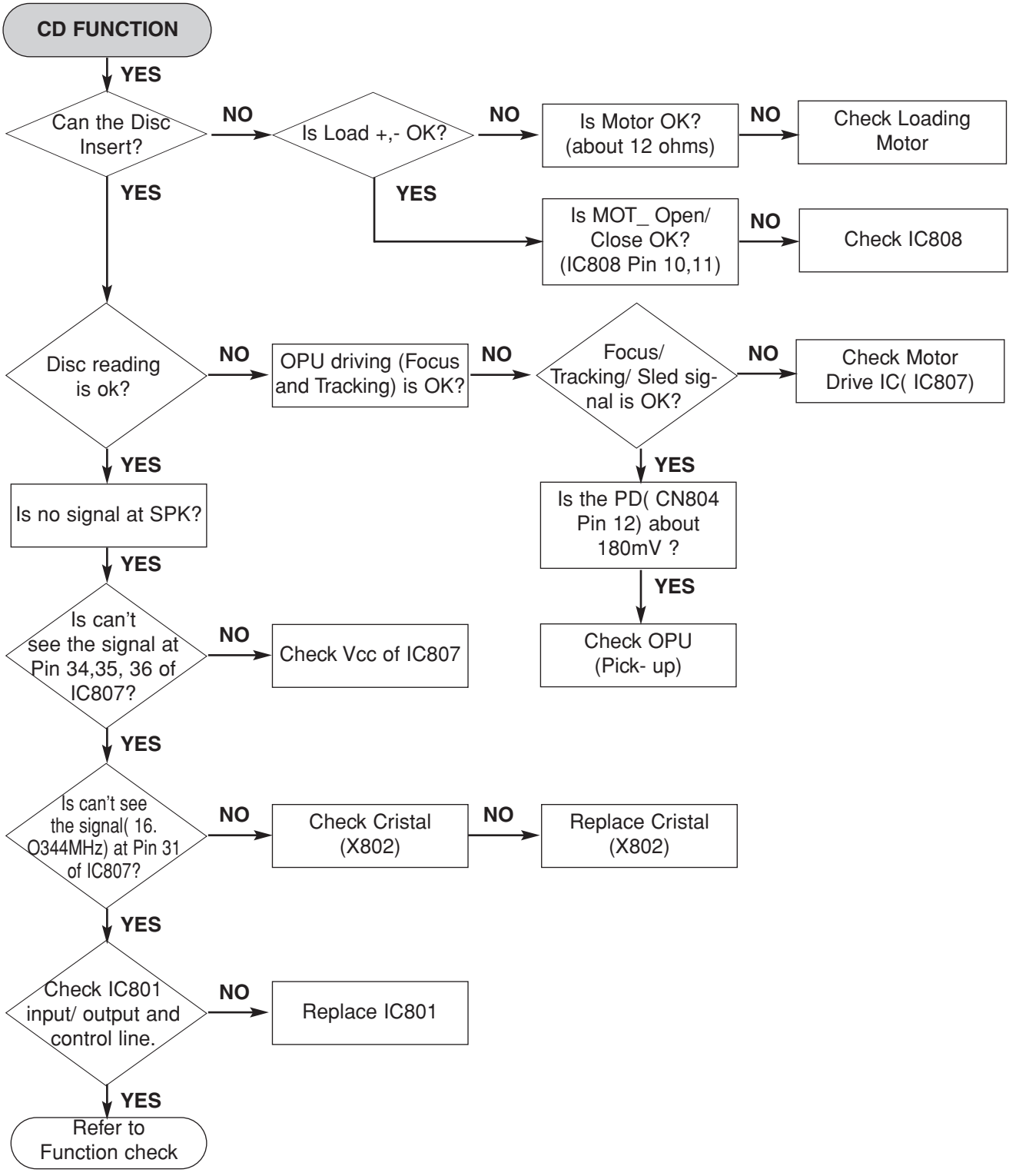
MEMO

MEMO

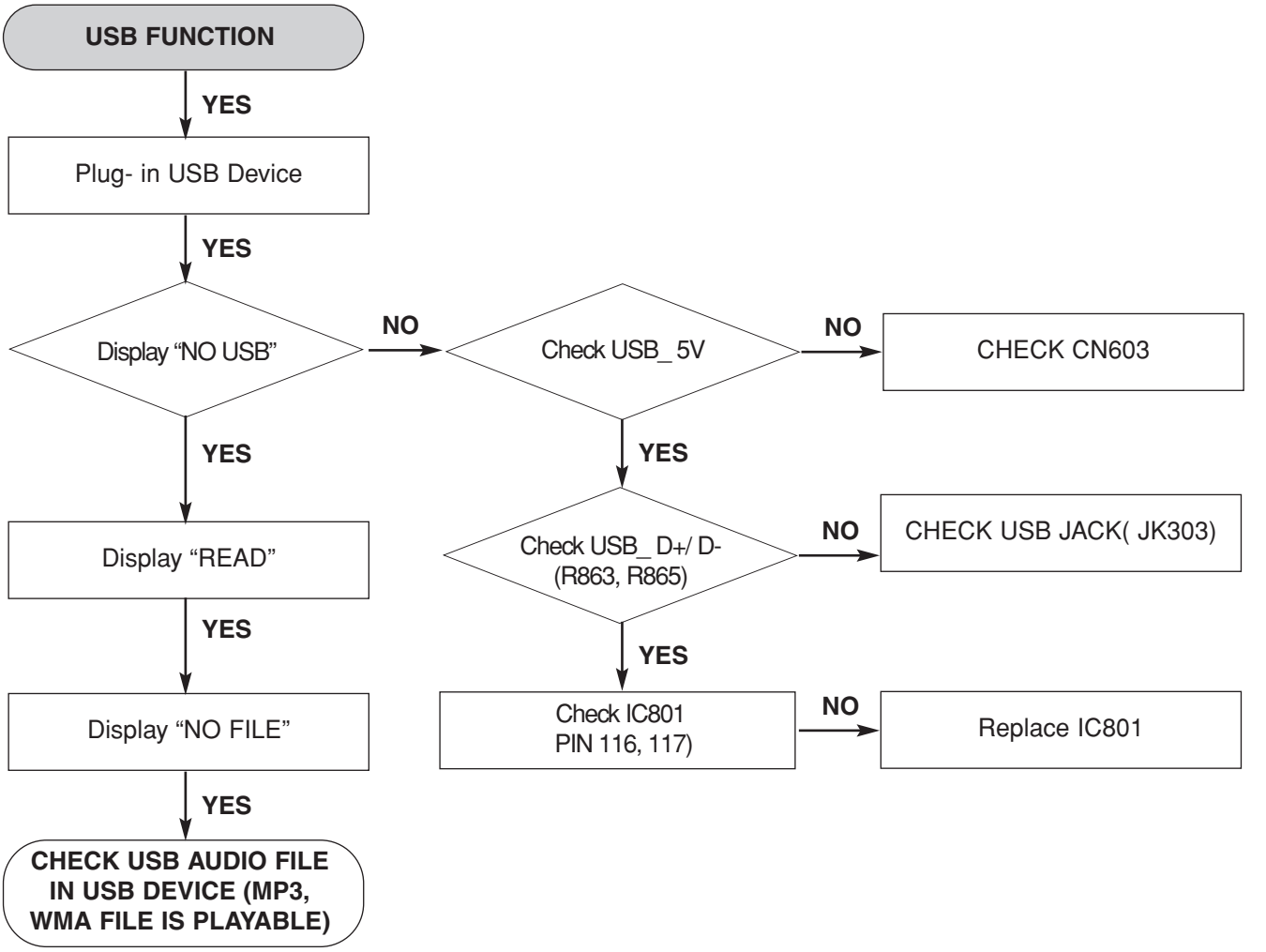
SECTION 4. CD ELECTRICAL PART

❑ CD ELECTRICAL TROUBLESHOOTING GUIDE

1. CD MAIN PART CHECK

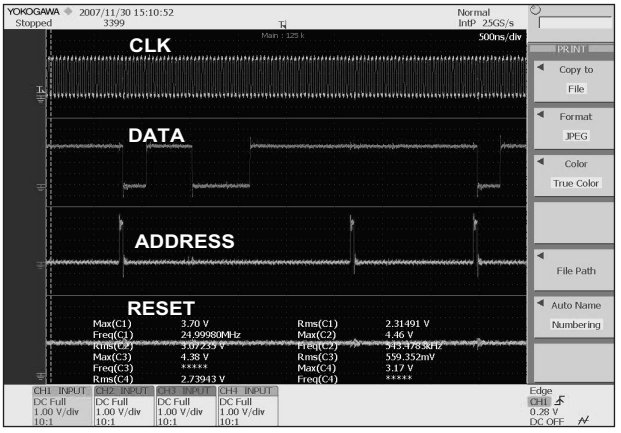


2. USB PART CHECK



❑ WAVEFORMS OF MAJOR CHECK POINT

1. FLASH/ SDRAM

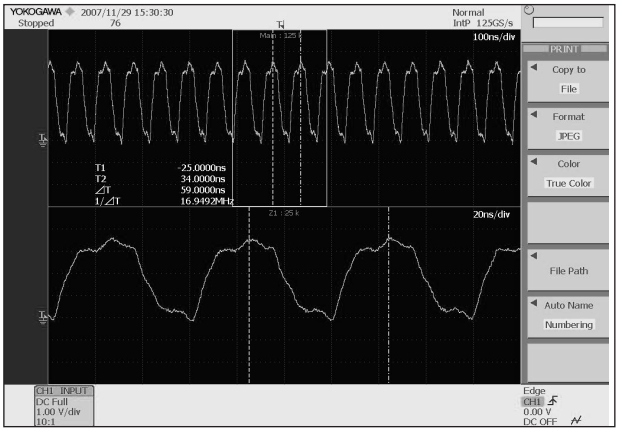


FLASH/ SDRAM

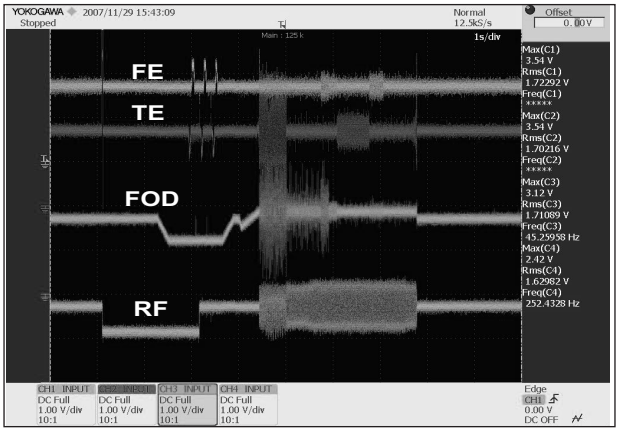
IC802 PIN 8,21,35

IC803 PIN12

2. SERVO

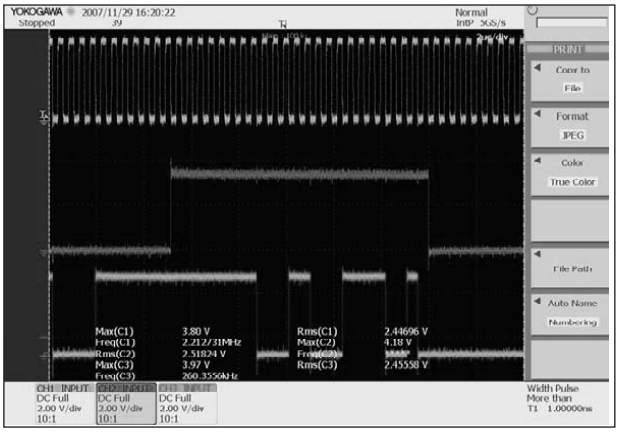


IC807 PIN30 CD-16M

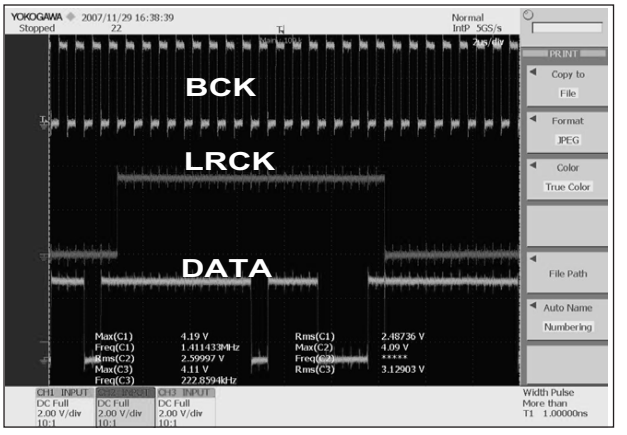


SERVOWAVEFORMS-FE,TE,FOD,RF

3. AUDIO PATH

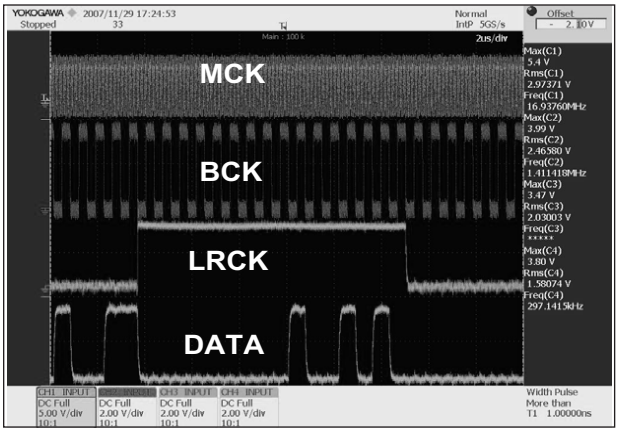


CD_ I2S
IC807 PIN34,35,36

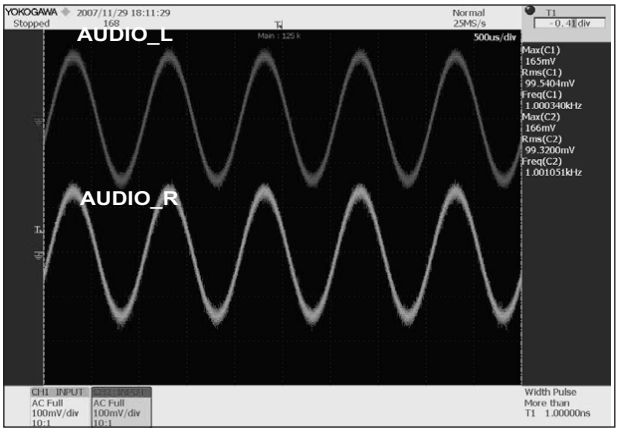


MUX_ I2S
IC801 PIN88,99,100

3. AUDIO PATH

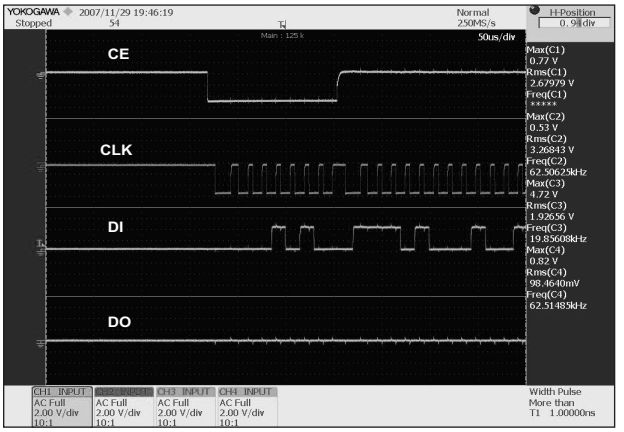


DAC_ I2S
IC807 PIN38,39,40,41



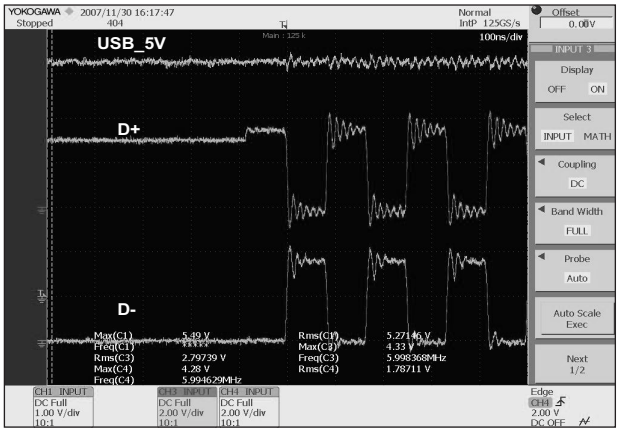
AUDIO_ L/ R

4. TUNER



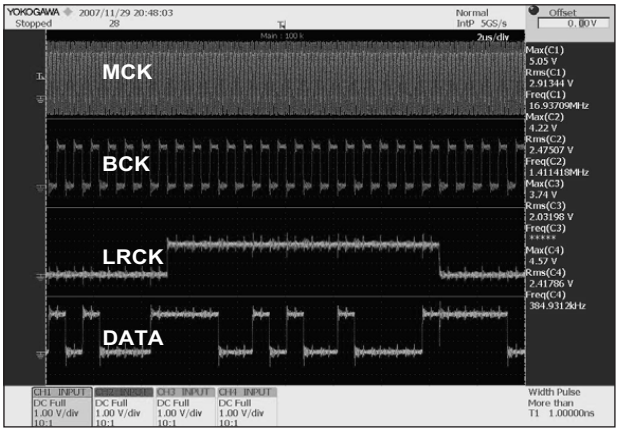
TUNER SPI
TUN800 PIN5,7,8,9

5. USB



USB D+/ D-
CN803 PIN2,3,4

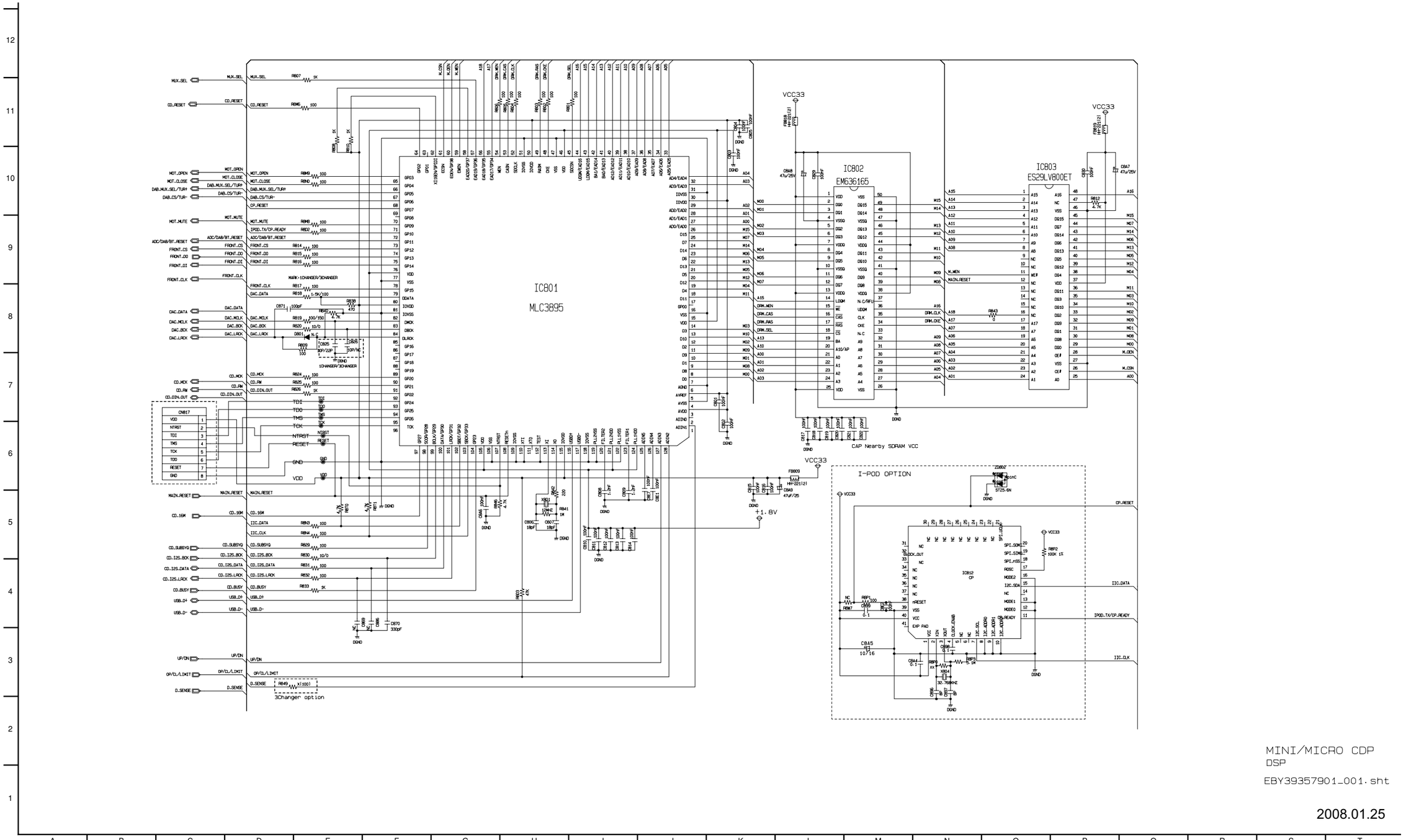
6. ADC



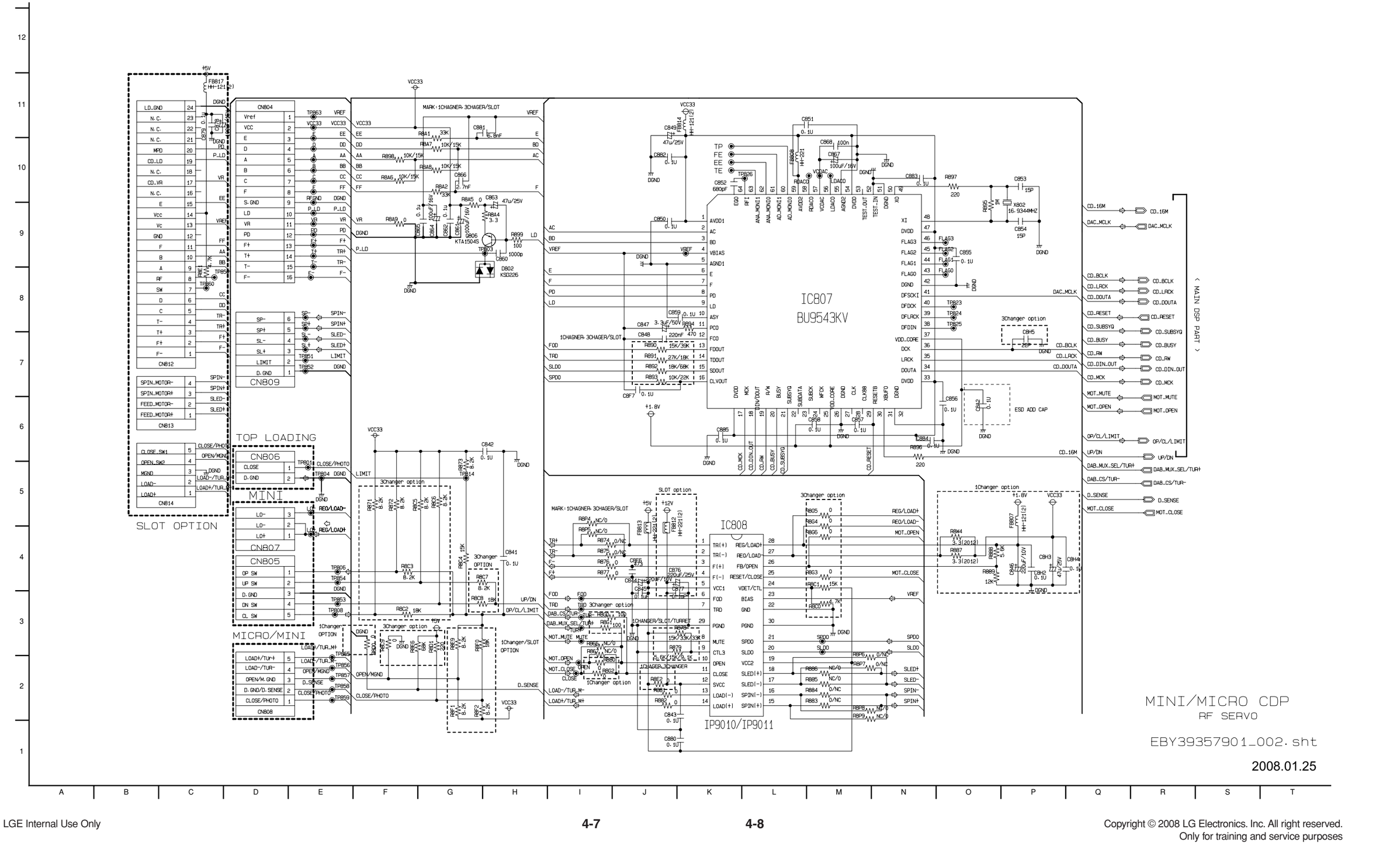
ADC I2S
IC805 PIN11,12,10,9

❑ CD SCHEMATIC DIAGRAMS

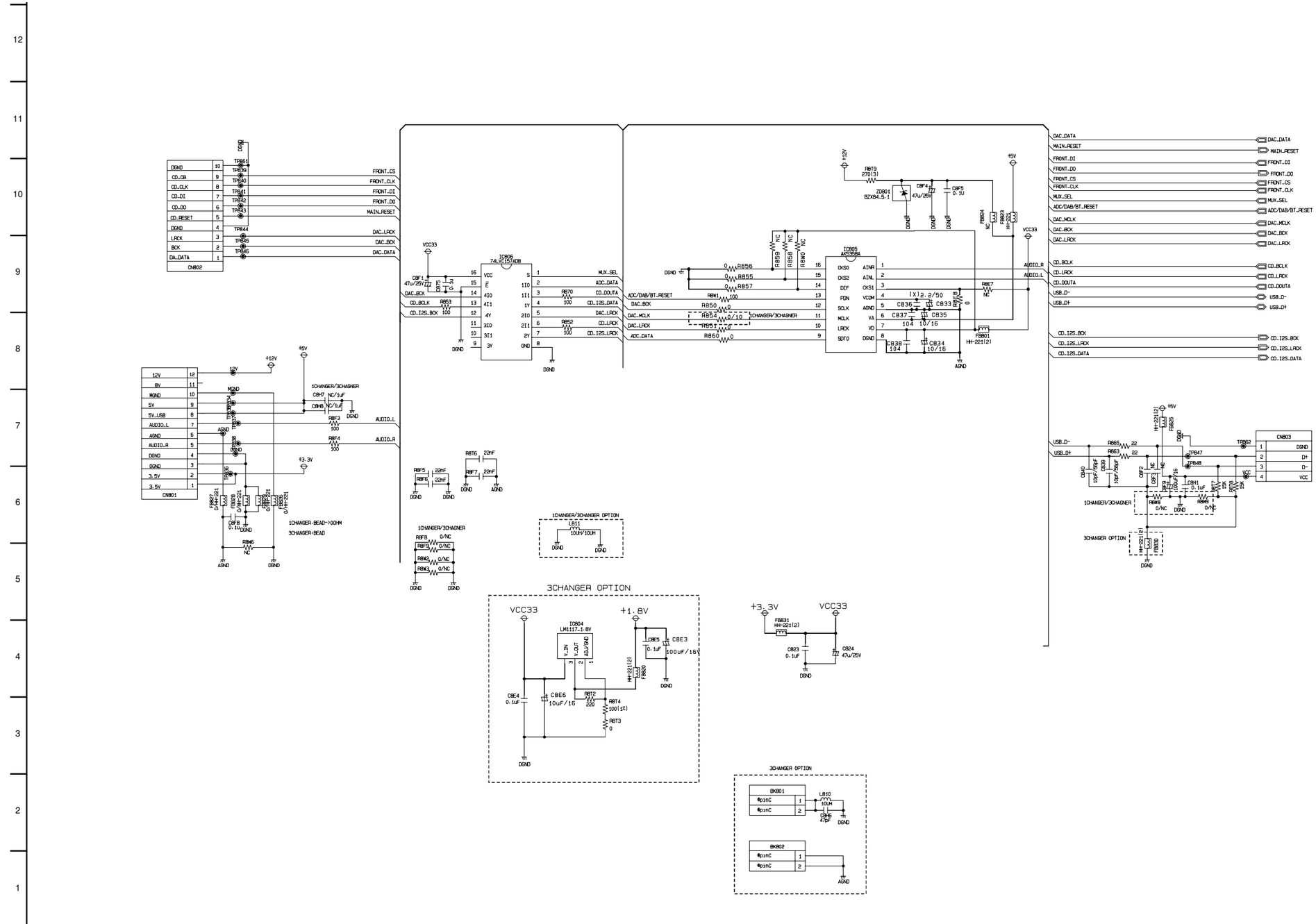
1. DSP SCHEMATIC DIAGRAM



2. RF SERVO SCHEMATIC DIAGRAM

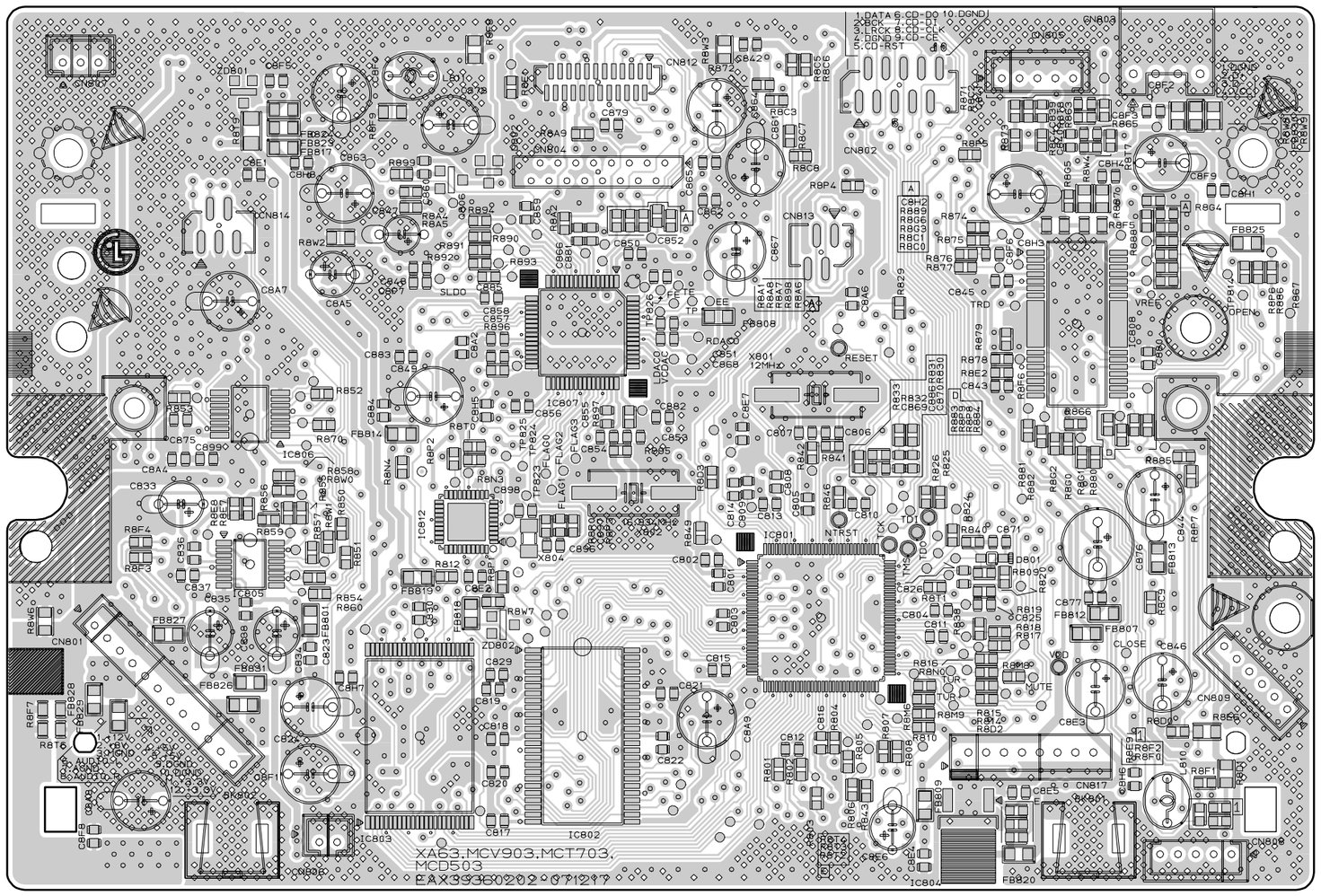


3. ADC SCHEMATIC DIAGRAM

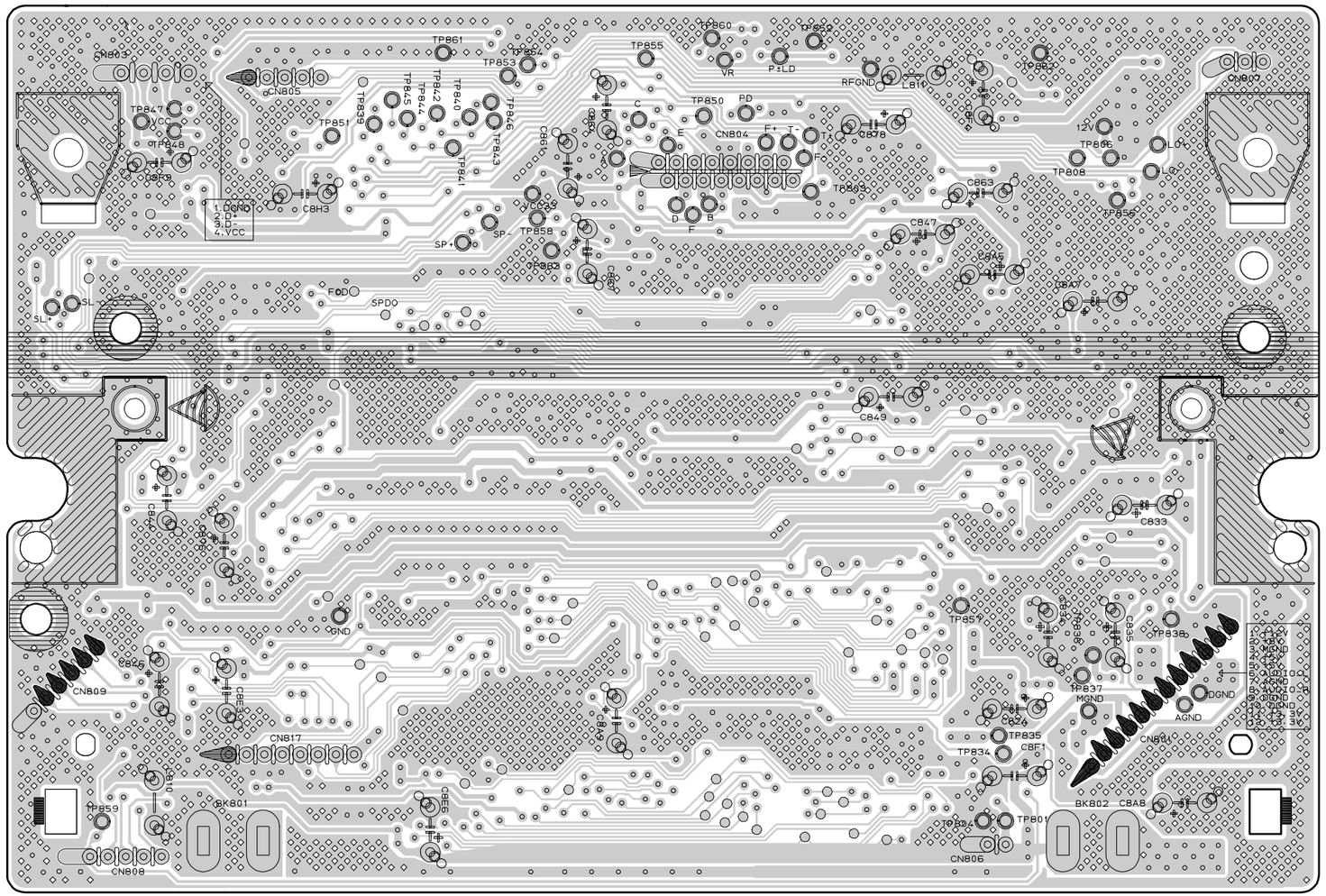


❑ PRINTED CIRCUIT BOARD DIAGRAMS

1-1. CD P.C. BOARD DIAGRAM (TOP VIEW)



1-2. CD P.C. BOARD DIAGRAM (BOTTOM VIEW)



MEMO

MEMO