SERVICE MANUAL

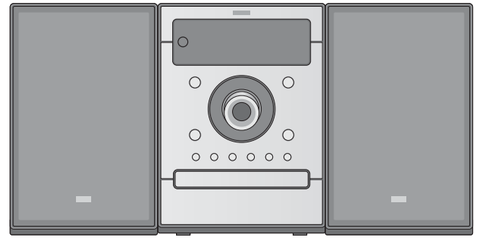
MODEL : XC102 (XCS102F)

http://biz.lgservice.com

MICRO Hi-Fi SYSTEM

SERVICE MANUAL

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



MODEL : XC102 (XCS102F)

P/NO : AFN32840891

APRIL, 2007

LG

CONTENTS

SECTION 1 GENERAL

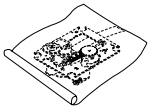
SERVICING PRECAUTIONS

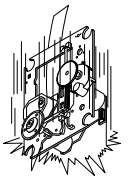
NOTES REGARDING HANDLING OF THE PICK-UP

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

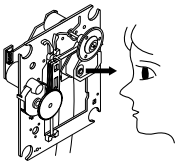




Drop impact

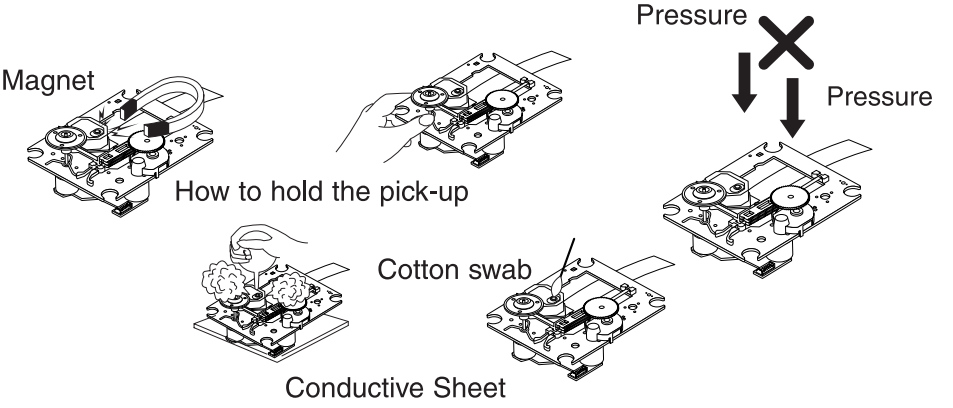
2. Repair notes

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.

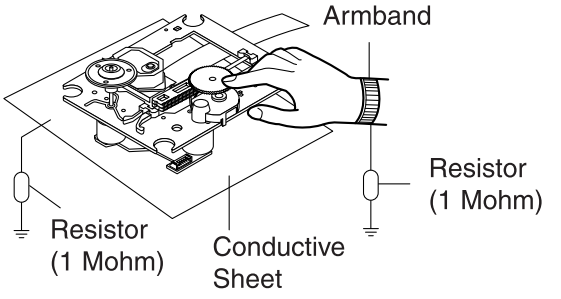
NOTES REGARDING COMPACT DISC PLAYER REPAIRS

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

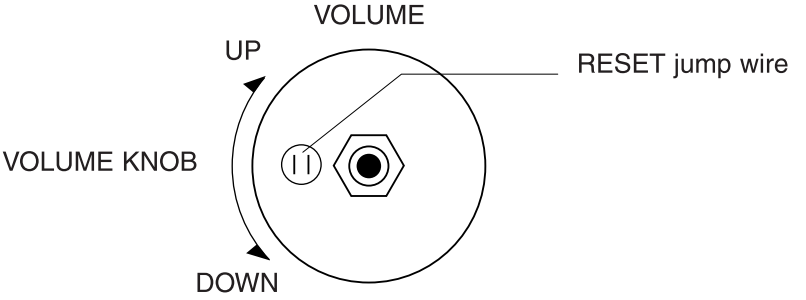
1) Before replacing a component part, first disconnect the power supply lead wire from the unit
2) All equipment, measuring instruments and tools must be grounded.
3) The workbench should be covered with a conductive sheet and grounded.
   When removing the laser pick-up from its conductive bag, do not 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)

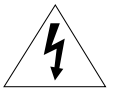
Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called electrostatically sensitive devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors and semiconductor chip components. The following 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 know 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.

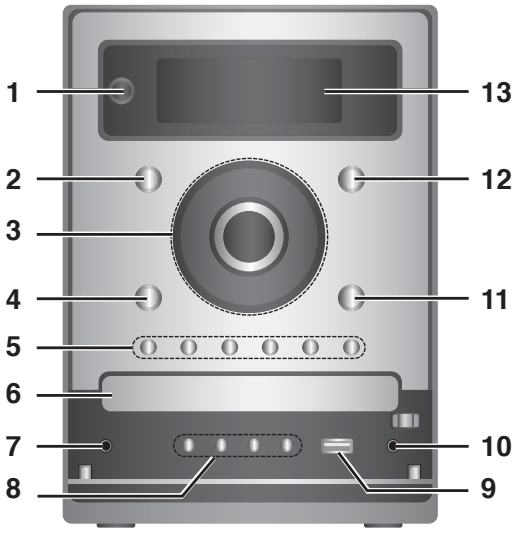
8. Minimize bodily motions when handing unpackaged replacement ESD devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ESD device).

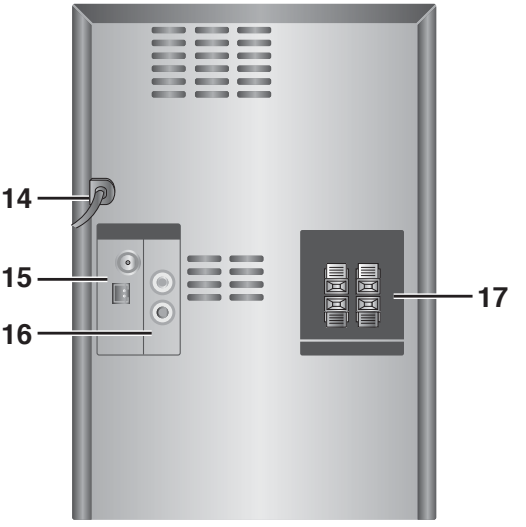
[CAUTION. GRAPHIC SYMBOLS]

	THE LIGHTNING FLASH WITH ARROWHEAD 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 INTENED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

LOCATION OF USERS CONTROLS

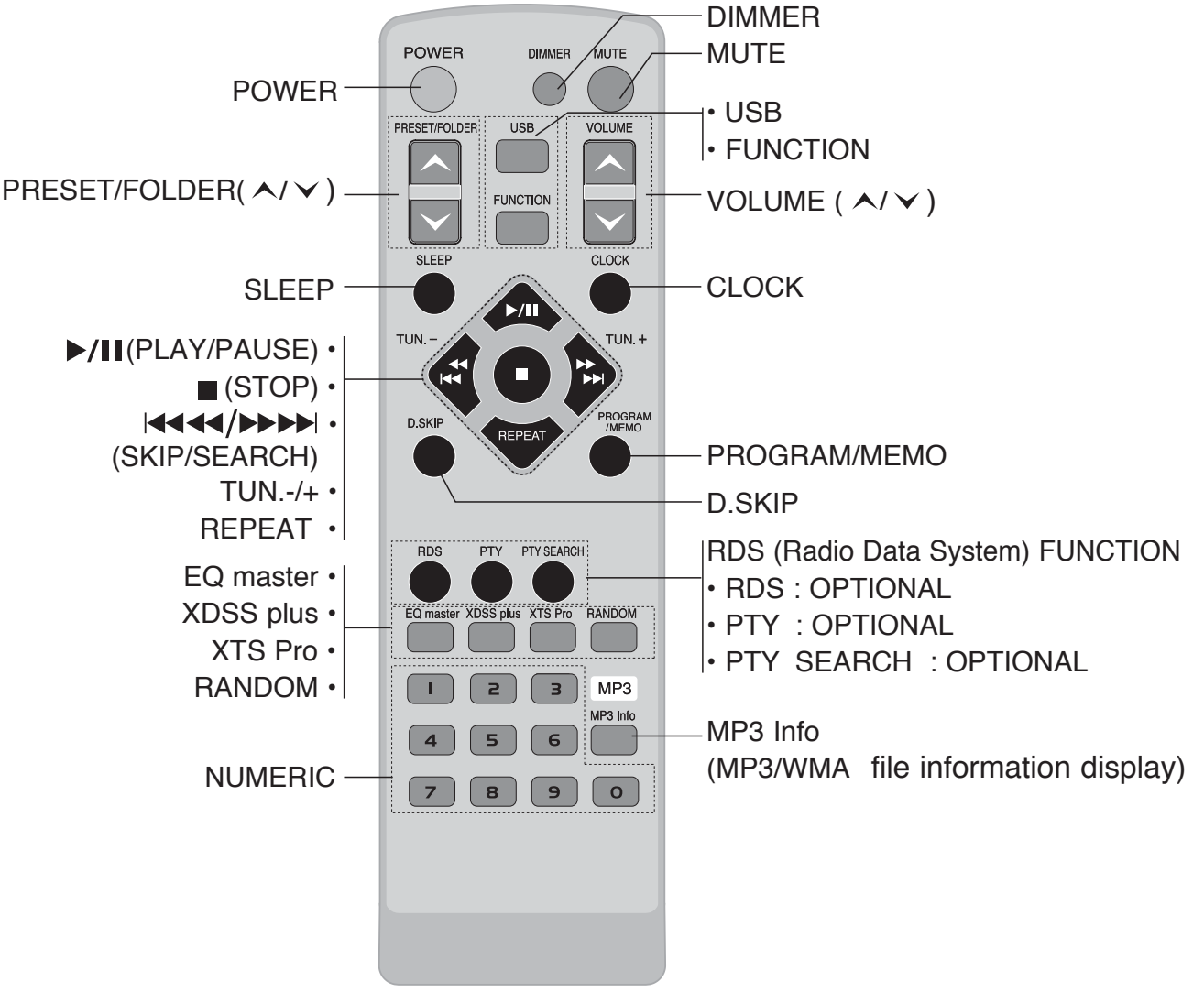
FRONT / BACK PANEL





1. ⏻/❙(POWER)
2. CD
3. • ▶❙❙(PLAY/PAUSE)
   • ◀◀/▶▶ (SKIP/SEARCH)
     TUNE.-/+
   • ■ (STOP)
   • VOLUME CONTROL KNOB
4. USB
5. • XDSS plus
   • XTS pro
   • EQ Master
   • ST./MONO
   • PROG.
   • CD ⏏
6. DISC TRAY
7. 🎧(Headphone jack) : ø3.5mm
8. • DEMO
   • TIMER
   • CLOCK
   • SET (RDS - OPTIONAL)
9. ⇽ (USB connector)
10. PORT.IN jack
11. AUX (PORTABLE)
12. TUNER
13. DISPLAY WINDOW
14. POWER IN (POWER CORD)
15. AM/FM ANTENNA TERMINAL
16. AUX IN (AUXILIARY INPUT) connector
17. SPEAKER TERMINAL

REMOTE CONTROL



SPECIFICATIONS

• GENERAL

Power supply	Refer to the back panel of the unit.
Power consumption	Refer to the back panel of the unit.
Net Weight	3.0kg
External dimensions (WxHxD)	174 x 245 x 278mm

• TUNER

FM	Tuning Range	87.5 ~ 108.0MHz or 65 ~ 74MHz, 87.5 ~ 108.0MHz
	Intermediate Frequency	10.7MHz
	Signal to Noise Ratio	60/55dB
	Frequency Response	50 ~ 10000Hz
AM	Tuning Range	522 ~ 1620kHz or 520 ~ 1720kHz
	Intermediate Frequency	450kHz
	Signal to Noise Ratio	30dB
	Frequency Response	140 ~ 1800Hz

• AMPLIFIER

Output Power	50W + 50W
T.H.D	0.5%
Frequency Response	40 ~ 20000Hz
Signal-to-noise ratio	75dB

• CD

Frequency response	40 ~ 20000Hz
Signal-to-noise ratio	75dB
Dynamic range	75dB

• SPEAKERS

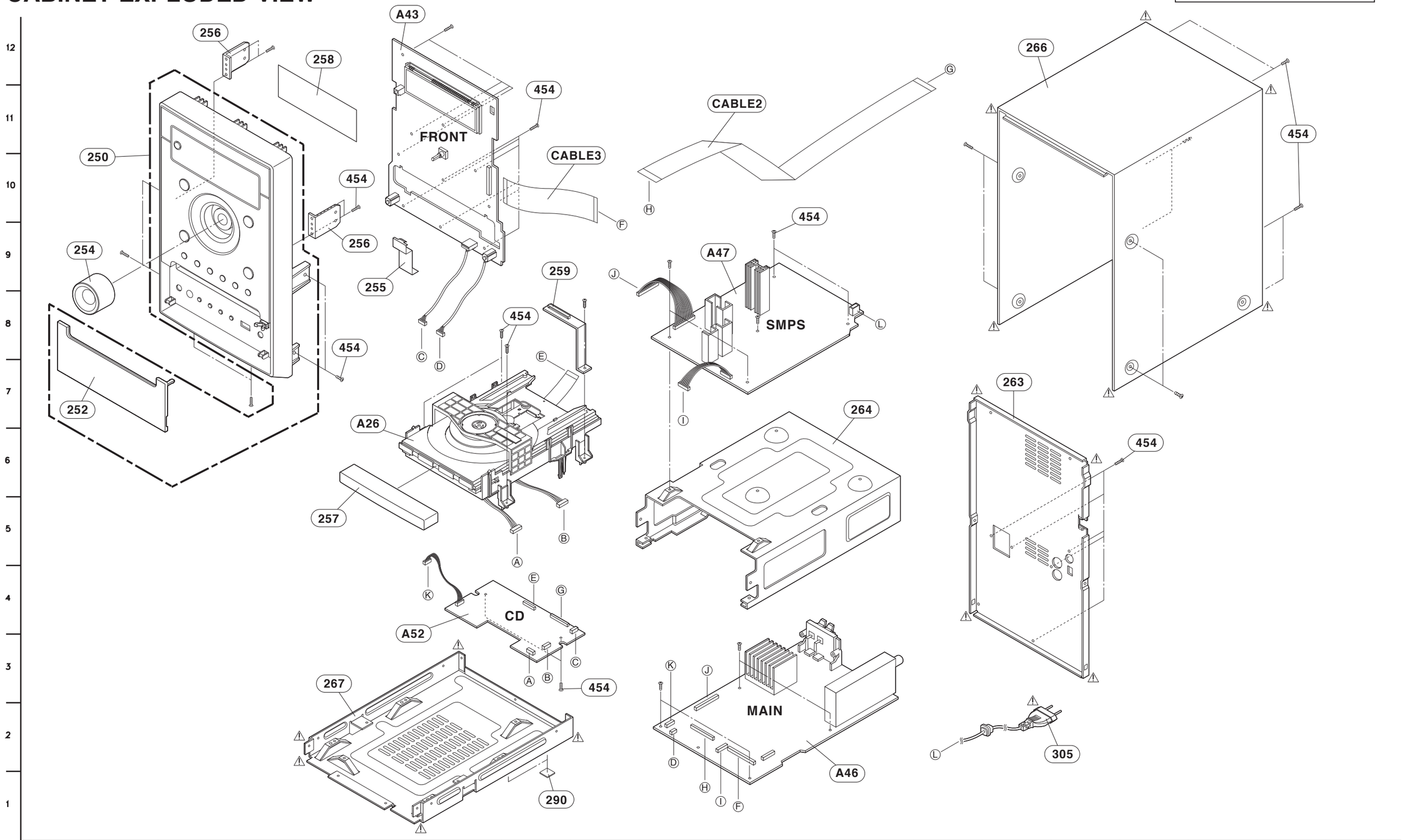
Type	2 Way 2 Speaker
Impedance	4Ω
Frequency Response	80 ~ 20000 Hz
Sound Pressure Level	82dB/W (1m)
Rated Input Power	50W
Max. Input Power	100W
Net Dimensions (WxHxD)	160 x 243 x 174mm
Net Weight (1EA)	2.02kg

MEMO

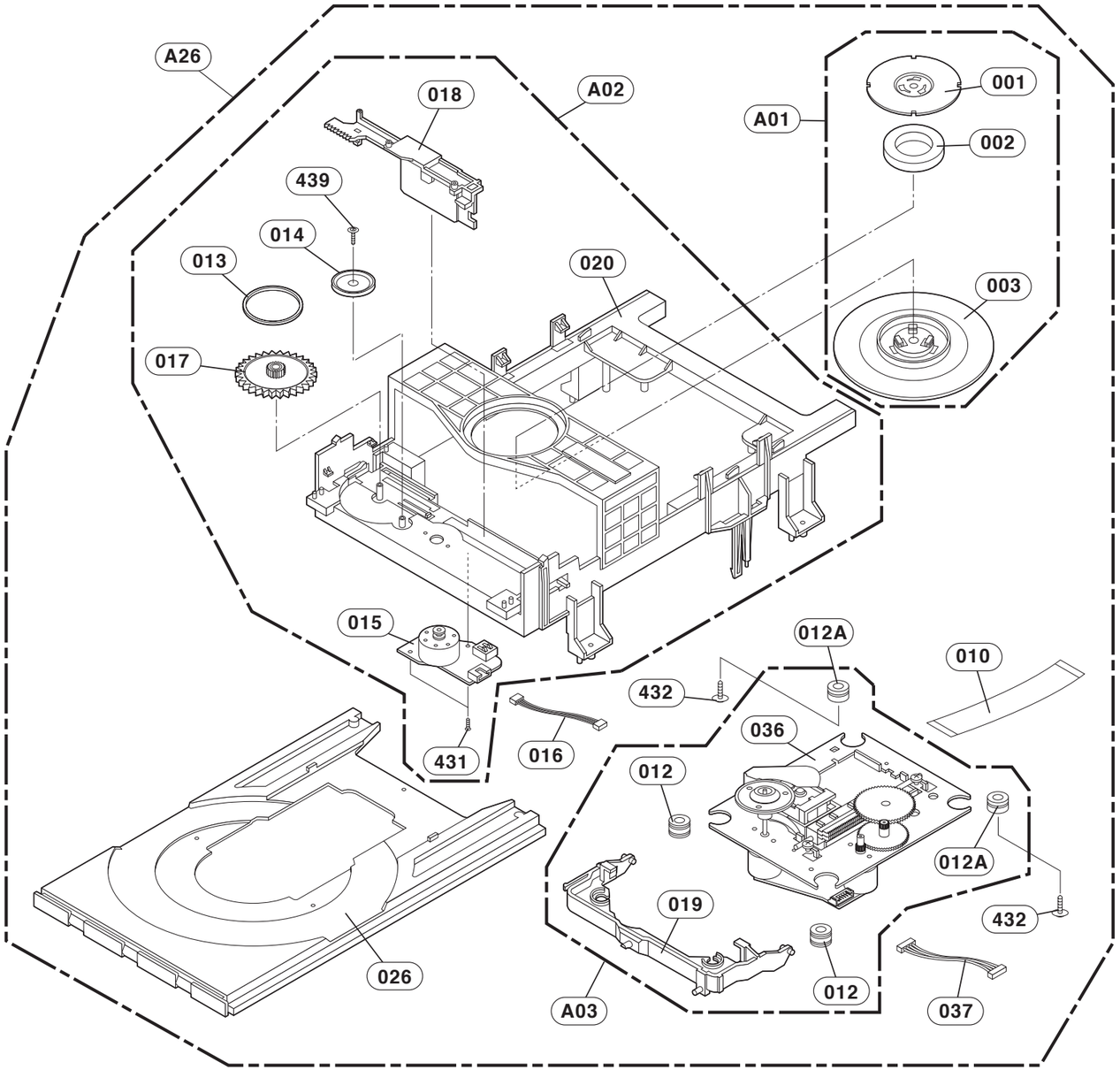
SECTION 2 EXPLODED VIEWS

CABINET EXPLODED VIEW

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.

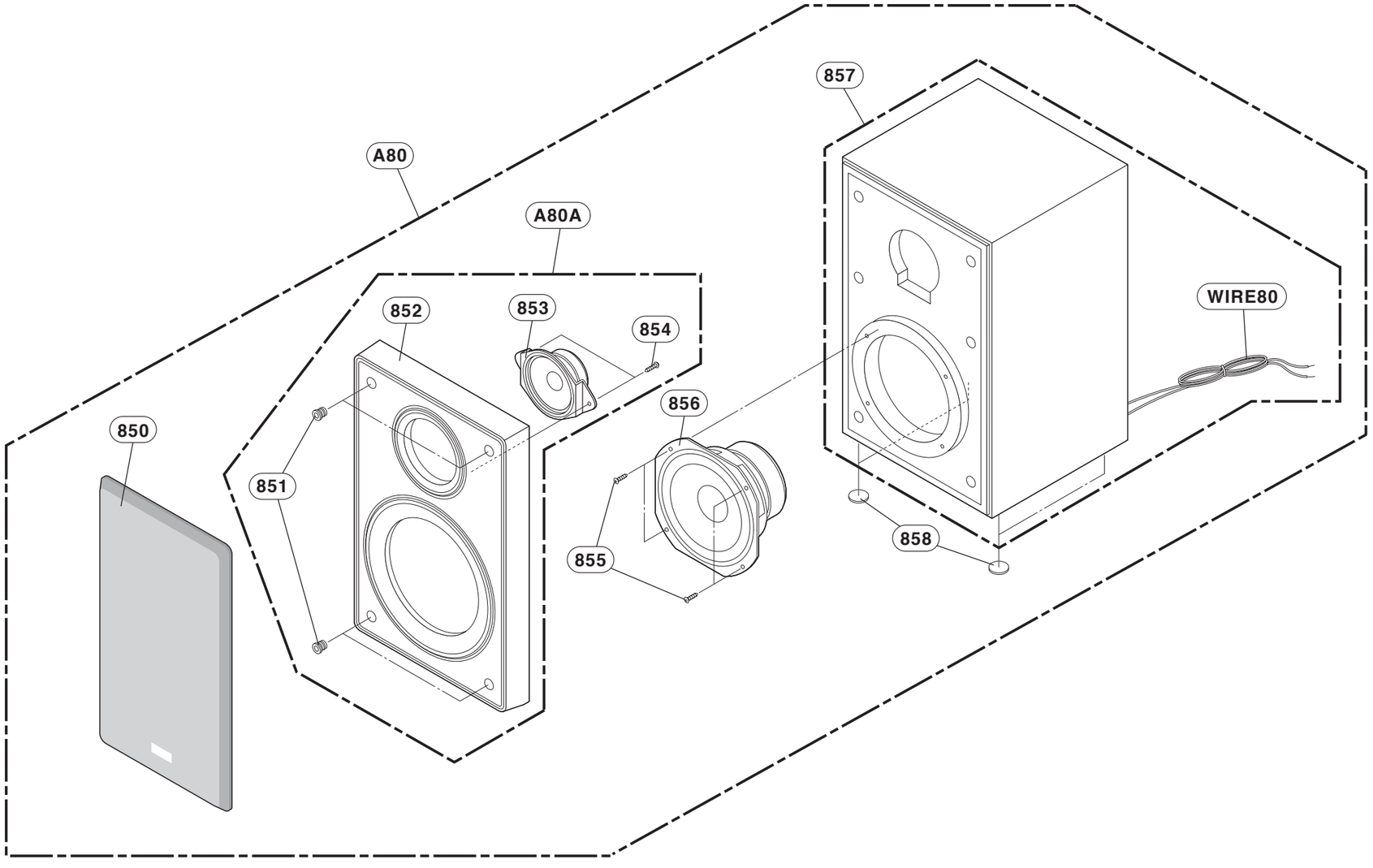


CD MECHANISM (CDM-330) EXPLODED VIEW



SPEAKER EXPLODED VIEW

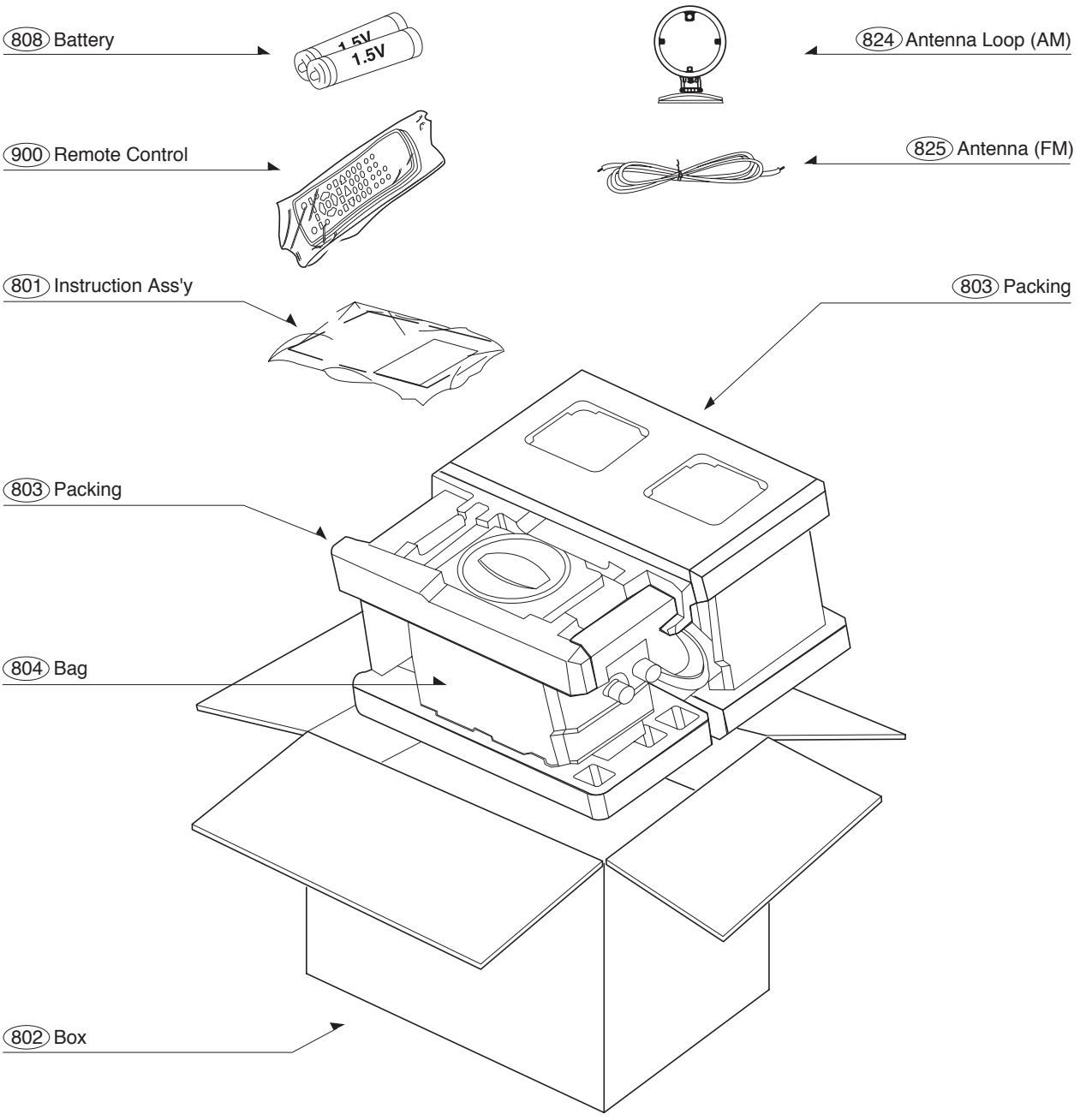
MODEL : XCS102F



MEMO

MEMO

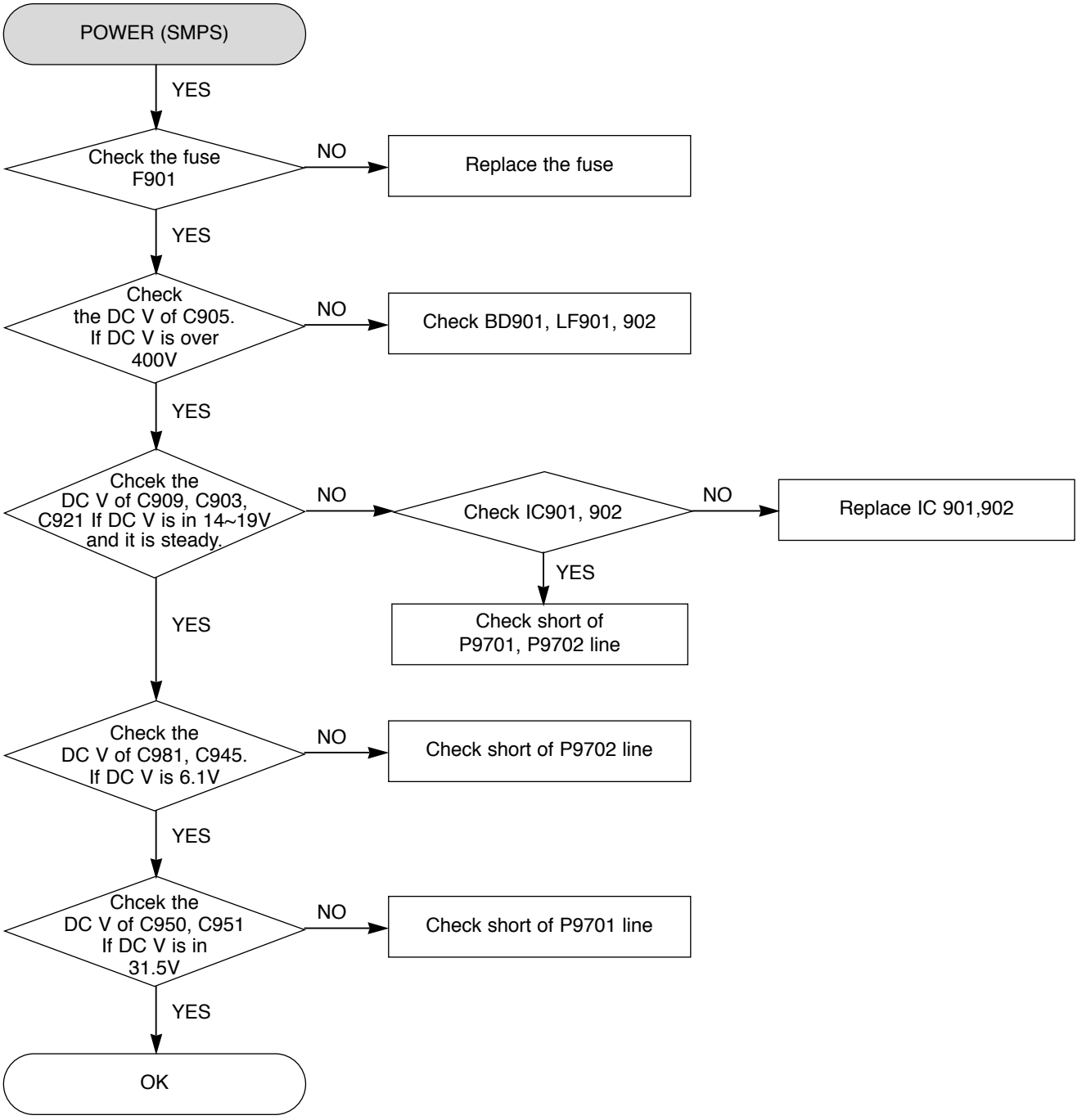
PACKING ACCESSORY VIEW



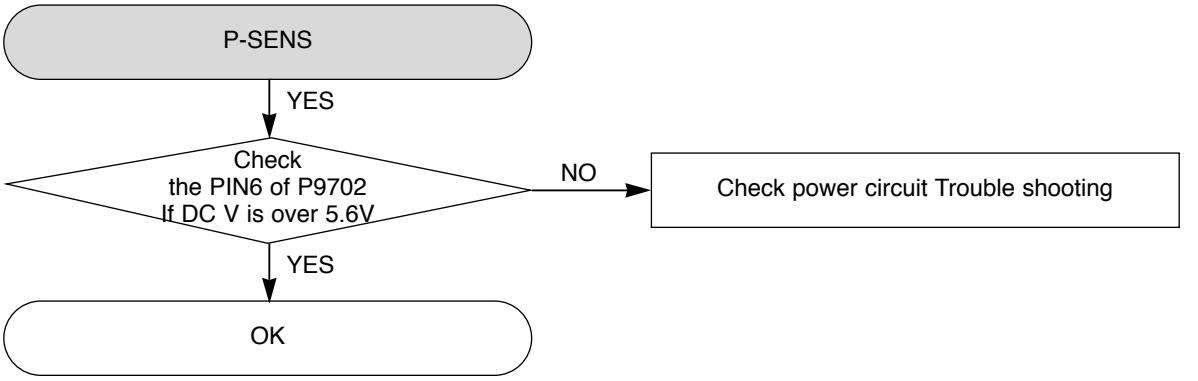
SECTION 3 AUDIO PART ELECTRICAL

AUDIO ELECTRICAL TROUBLESHOOTING GUIDE

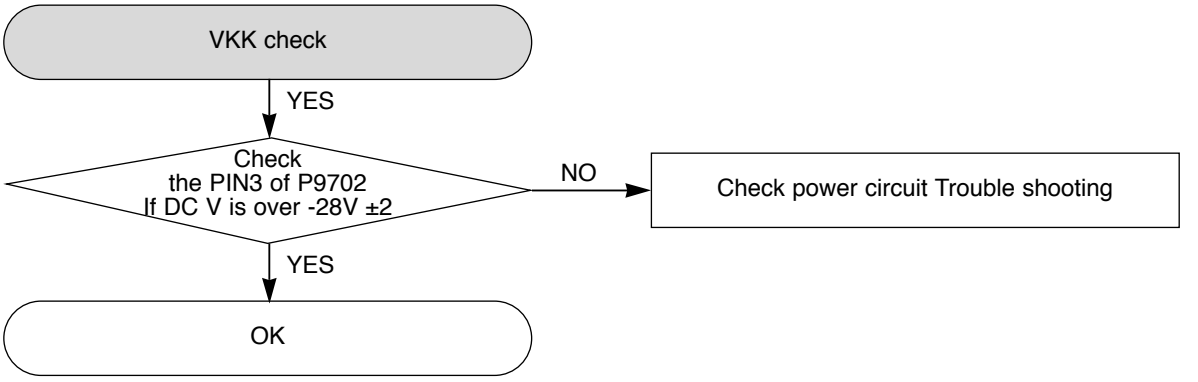
1. POWER (SMPS)



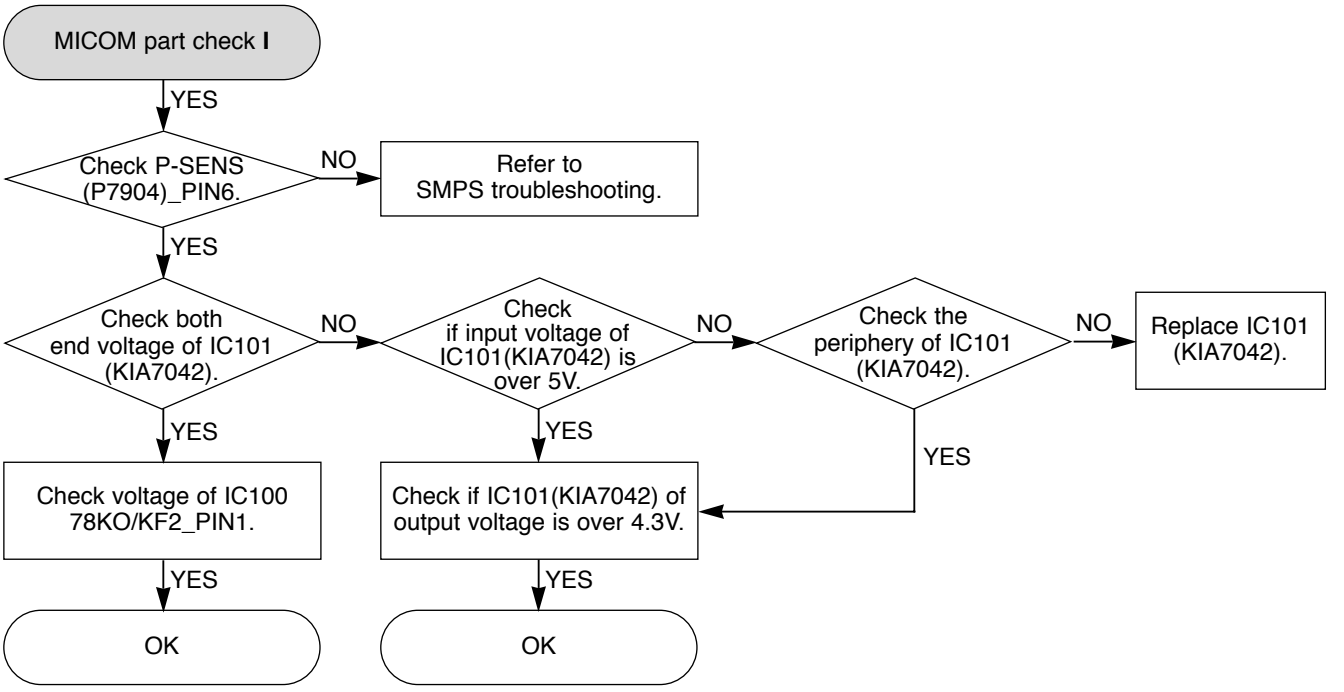
2. P-SENS



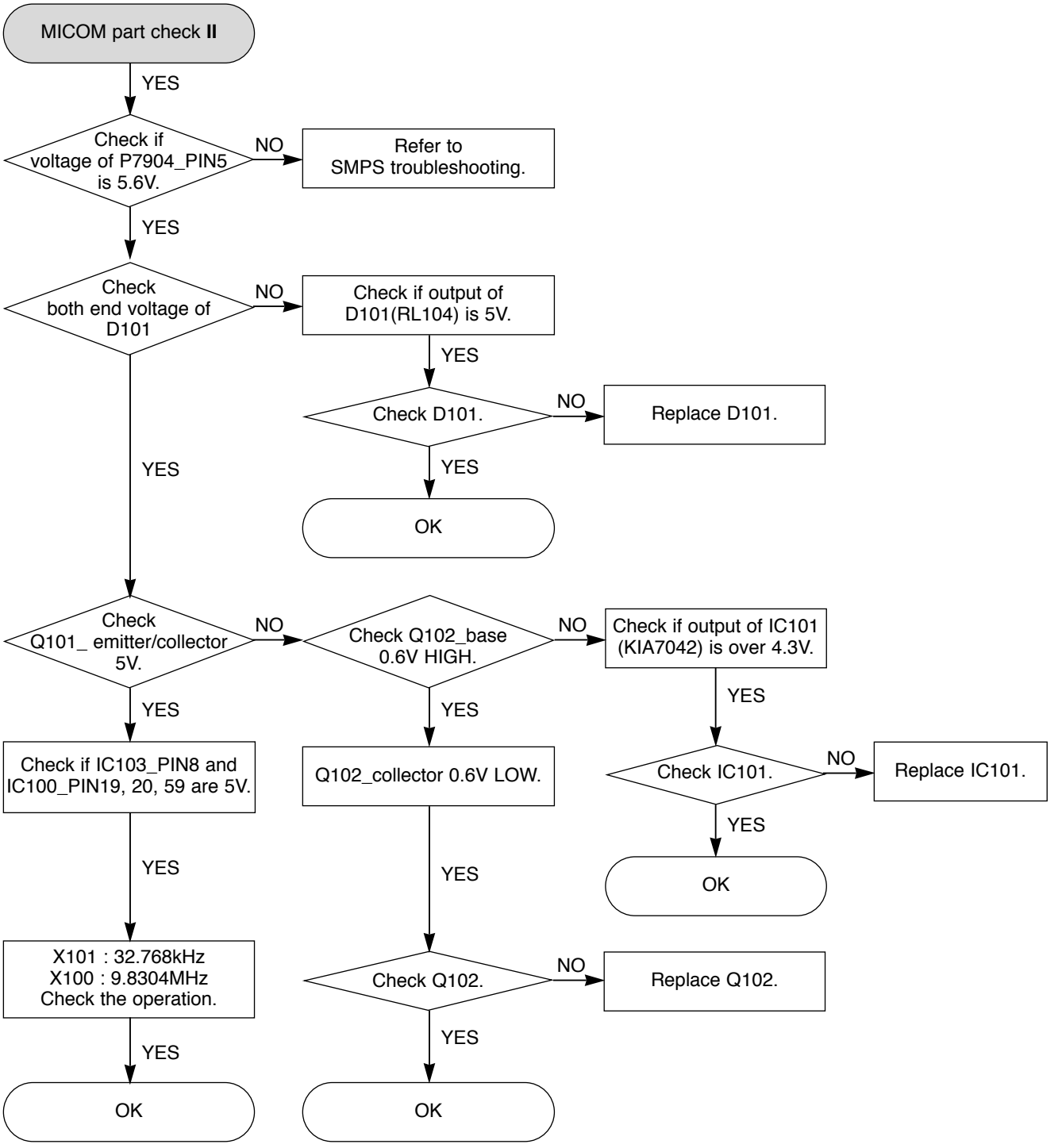
3. VKK CHECK



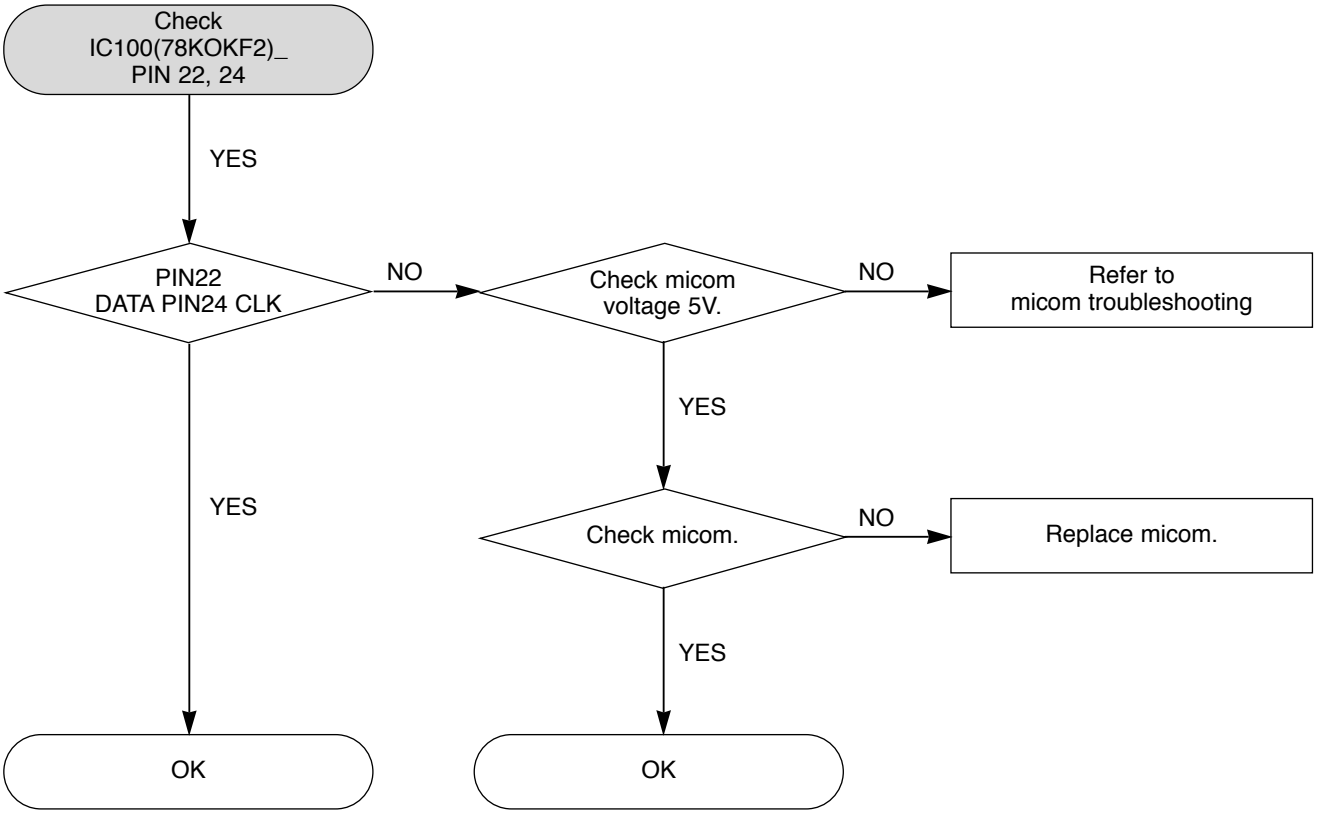
4. MICOM PART CHECK I



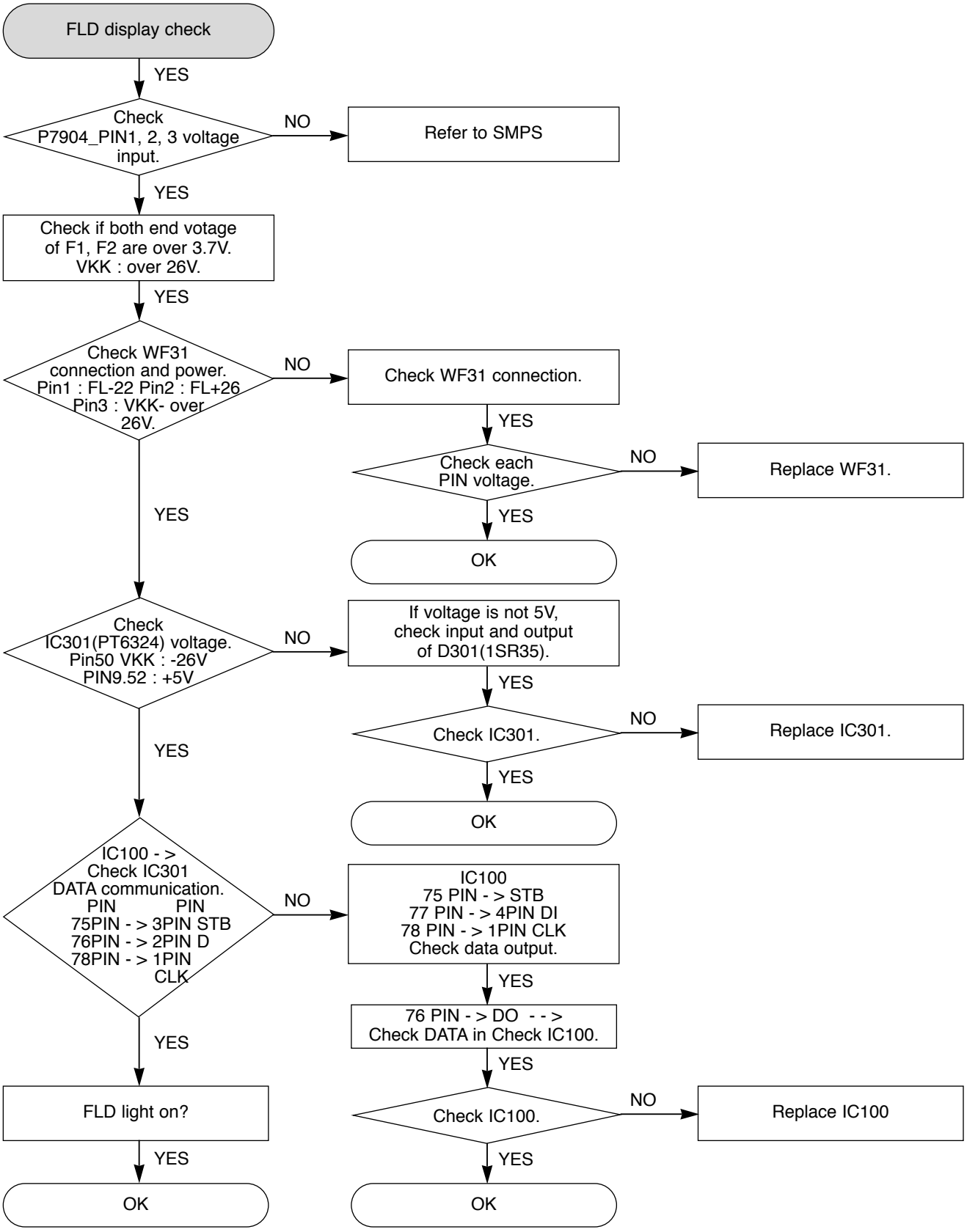
5. MICOM PART CHECK II



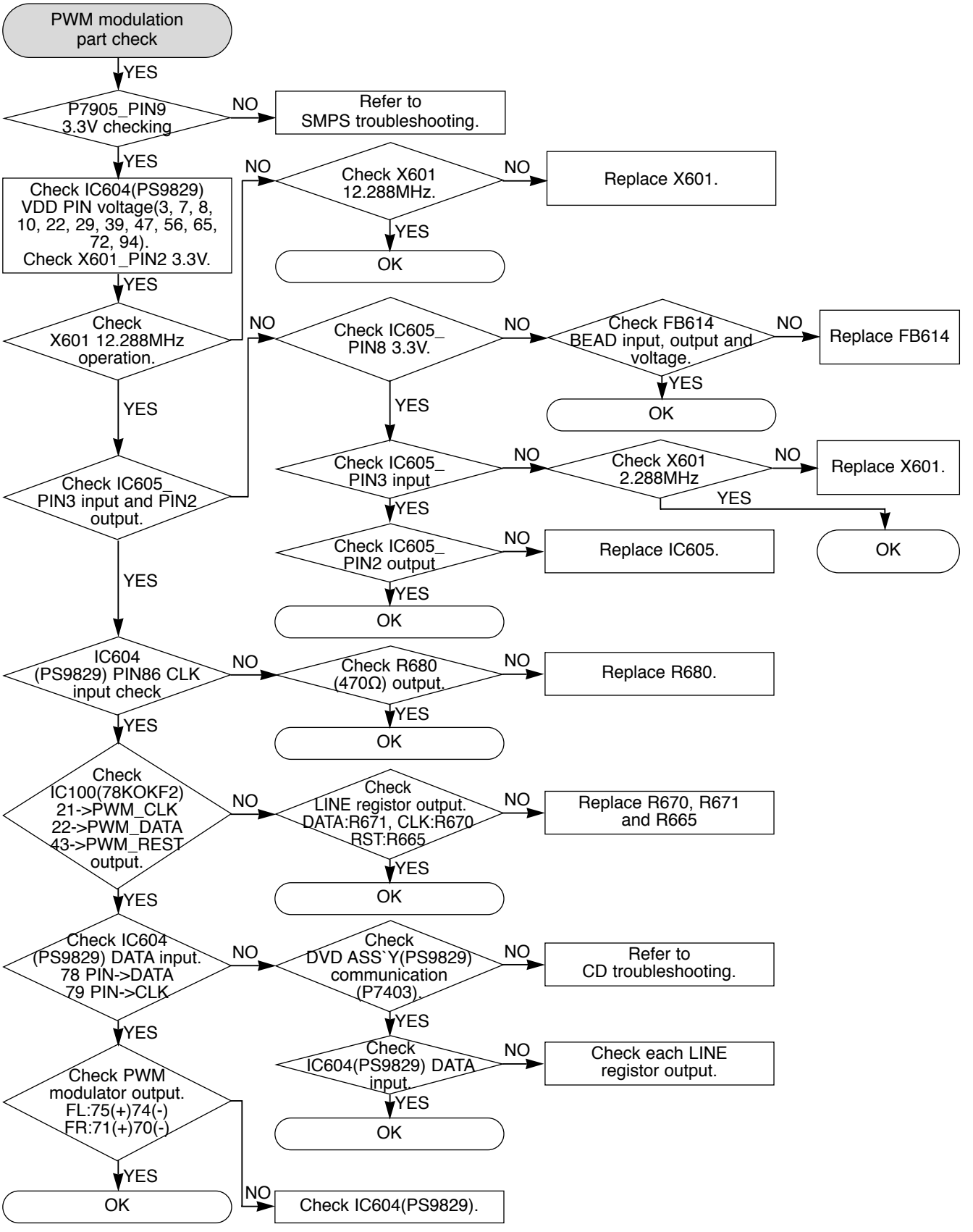
6. IC103(KS4CD21CS) CHECK



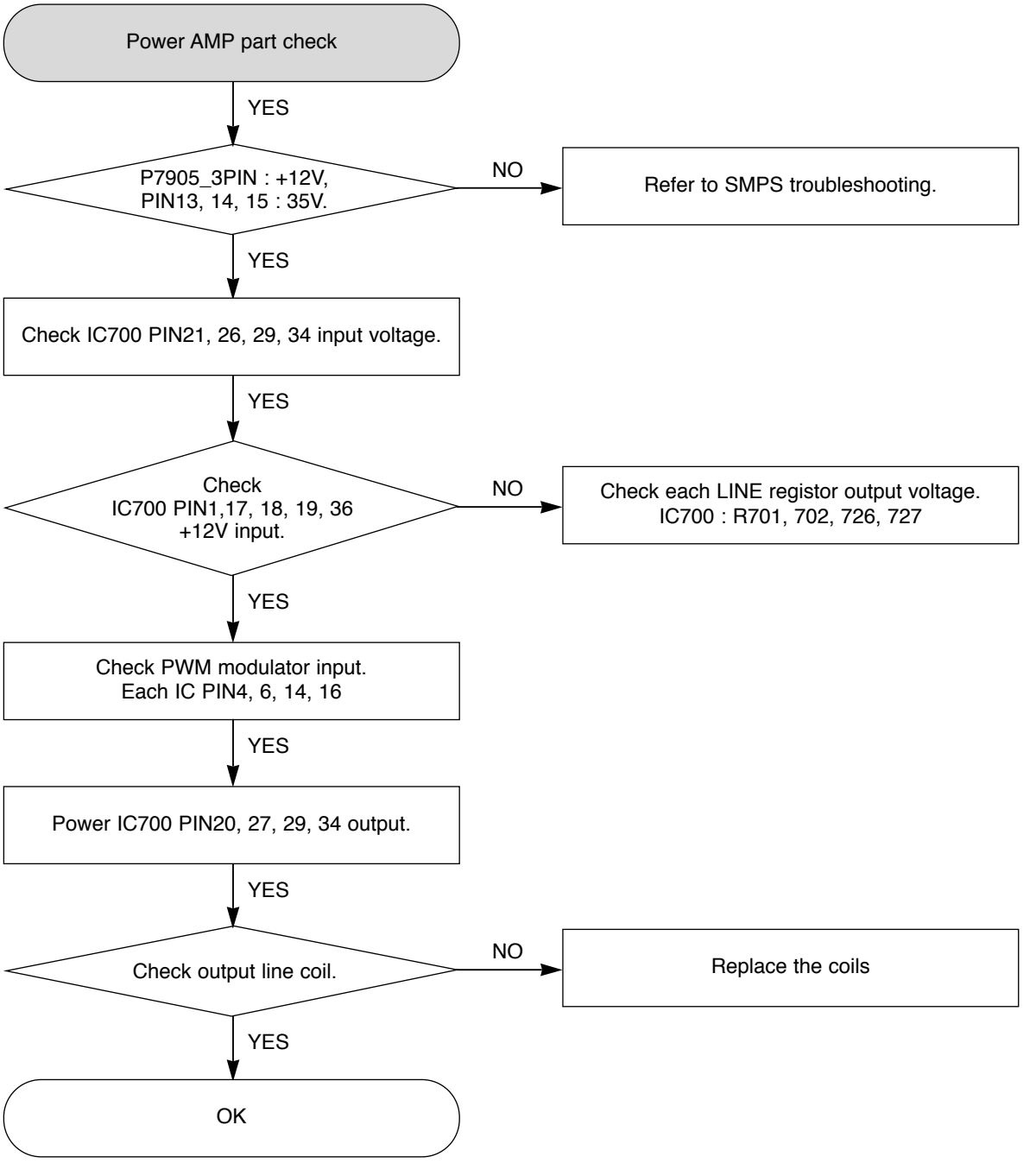
7. FLD DISPLAY CHECK



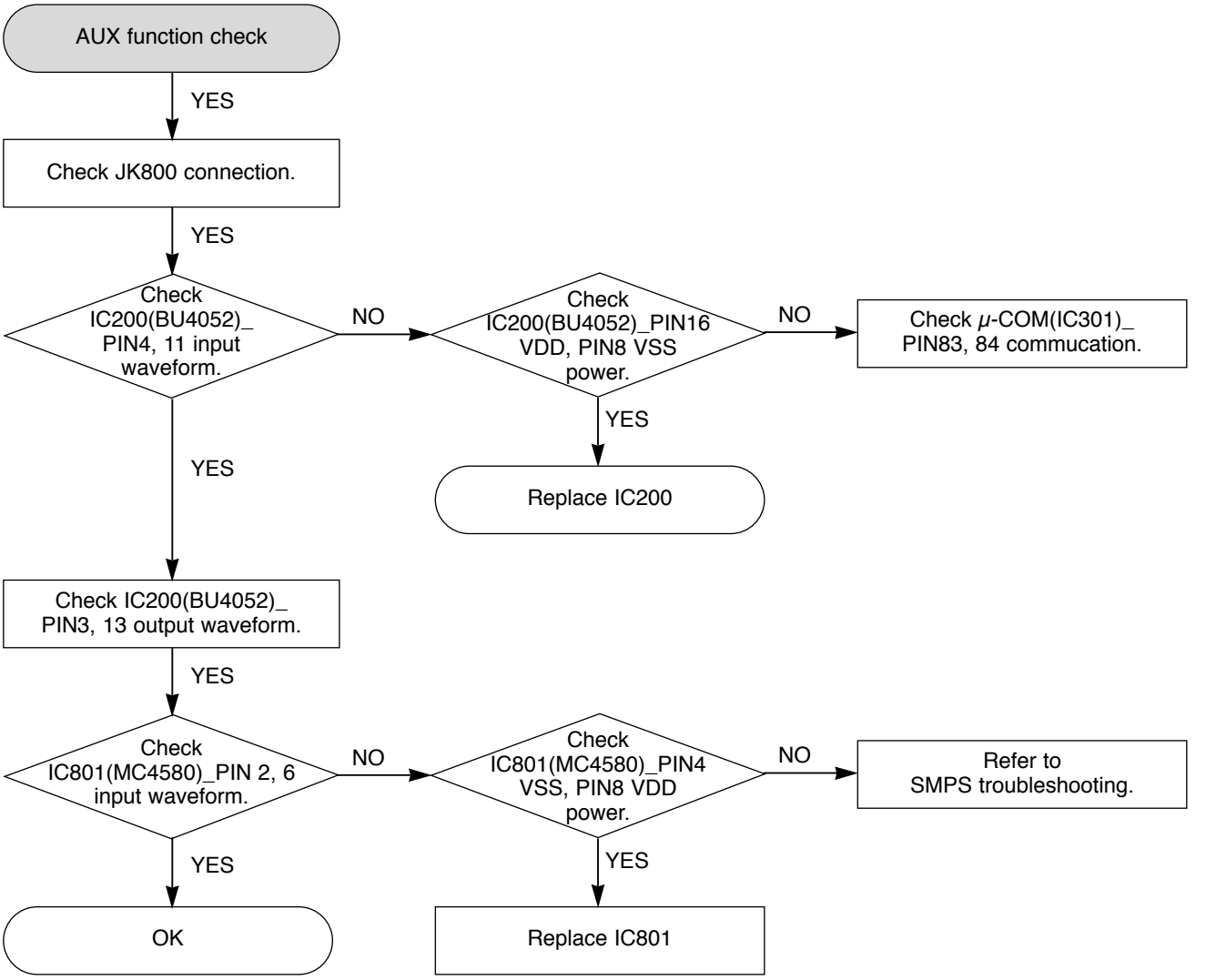
8. PWM MODULATION PART CHECK



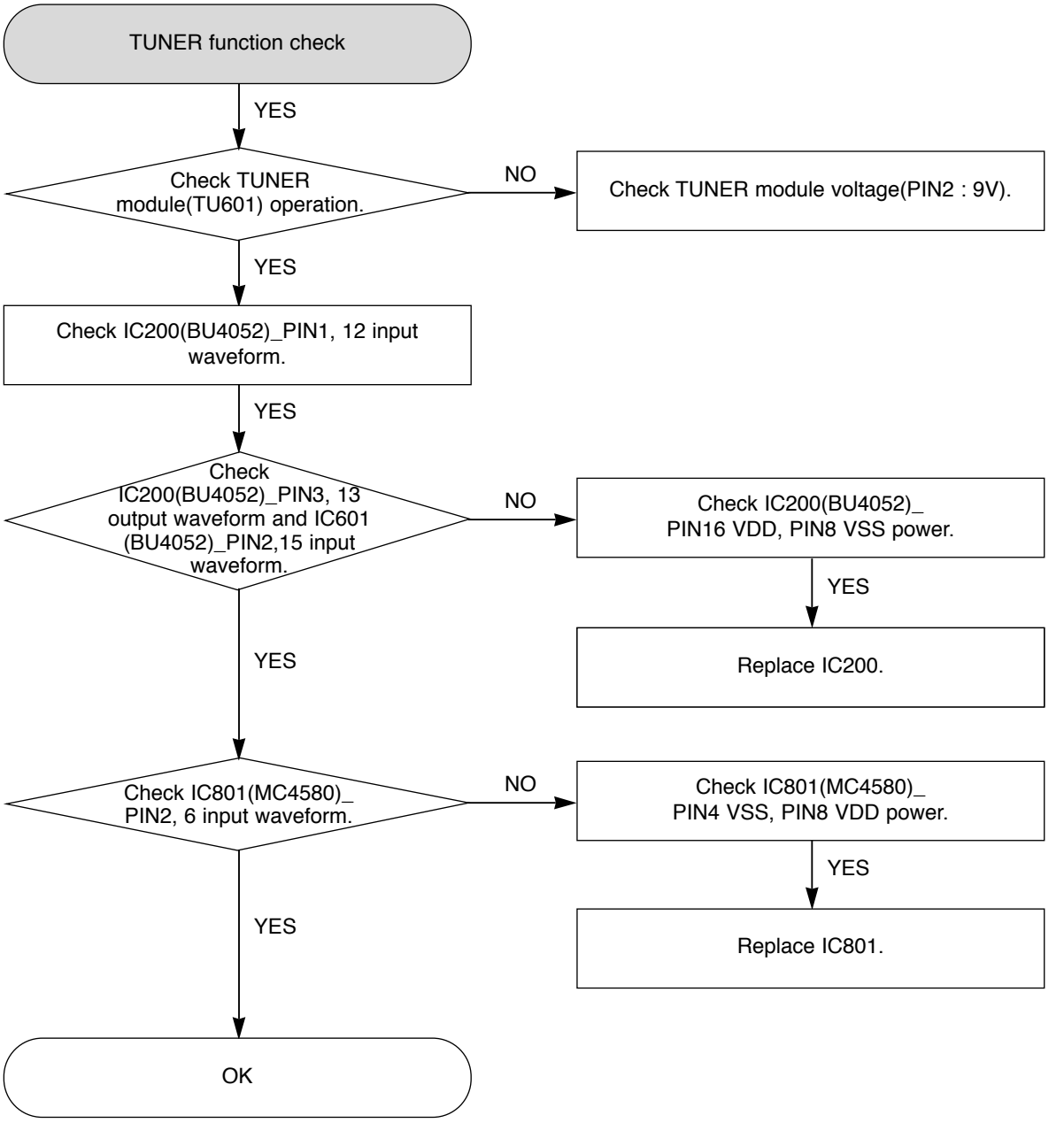
9. POWER AMP PART CHECK



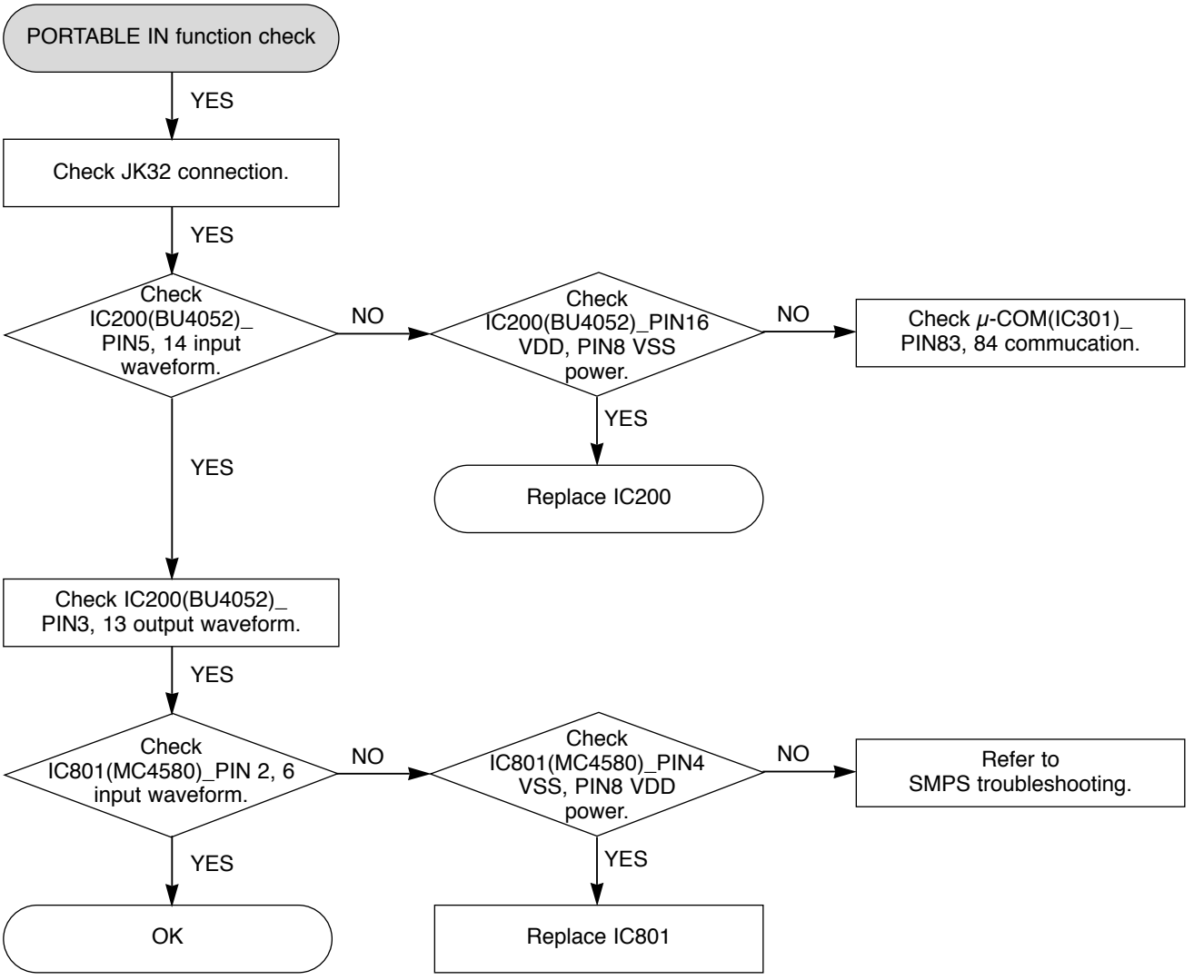
10. AUX FUNCTION CHECK



11. TUNER FUNCTION CHECK

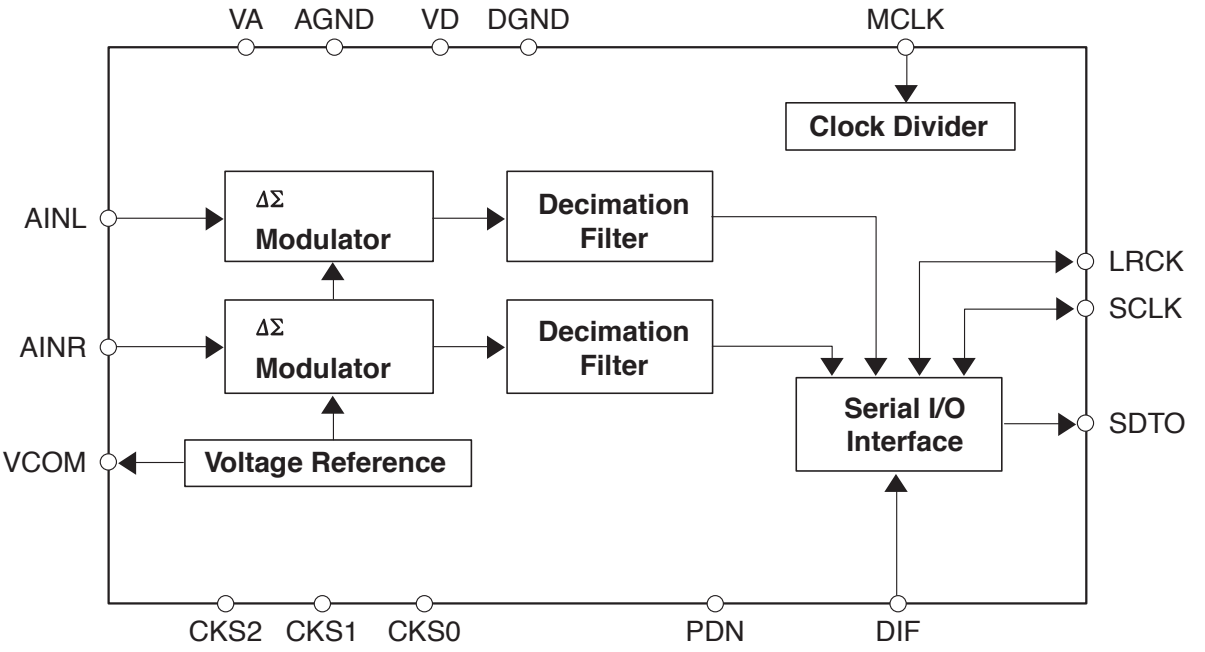


12. PORTABLE IN FUNCTION CHECK

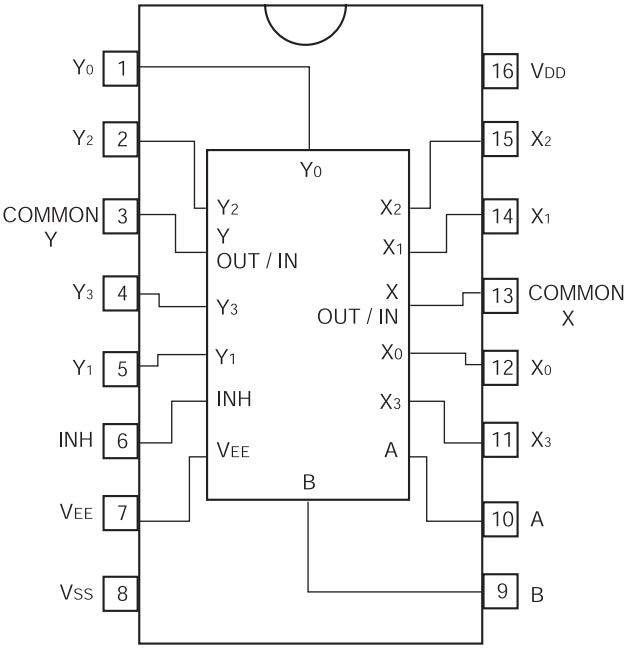


INTERNAL BLOCK DIAGRAM OF ICs

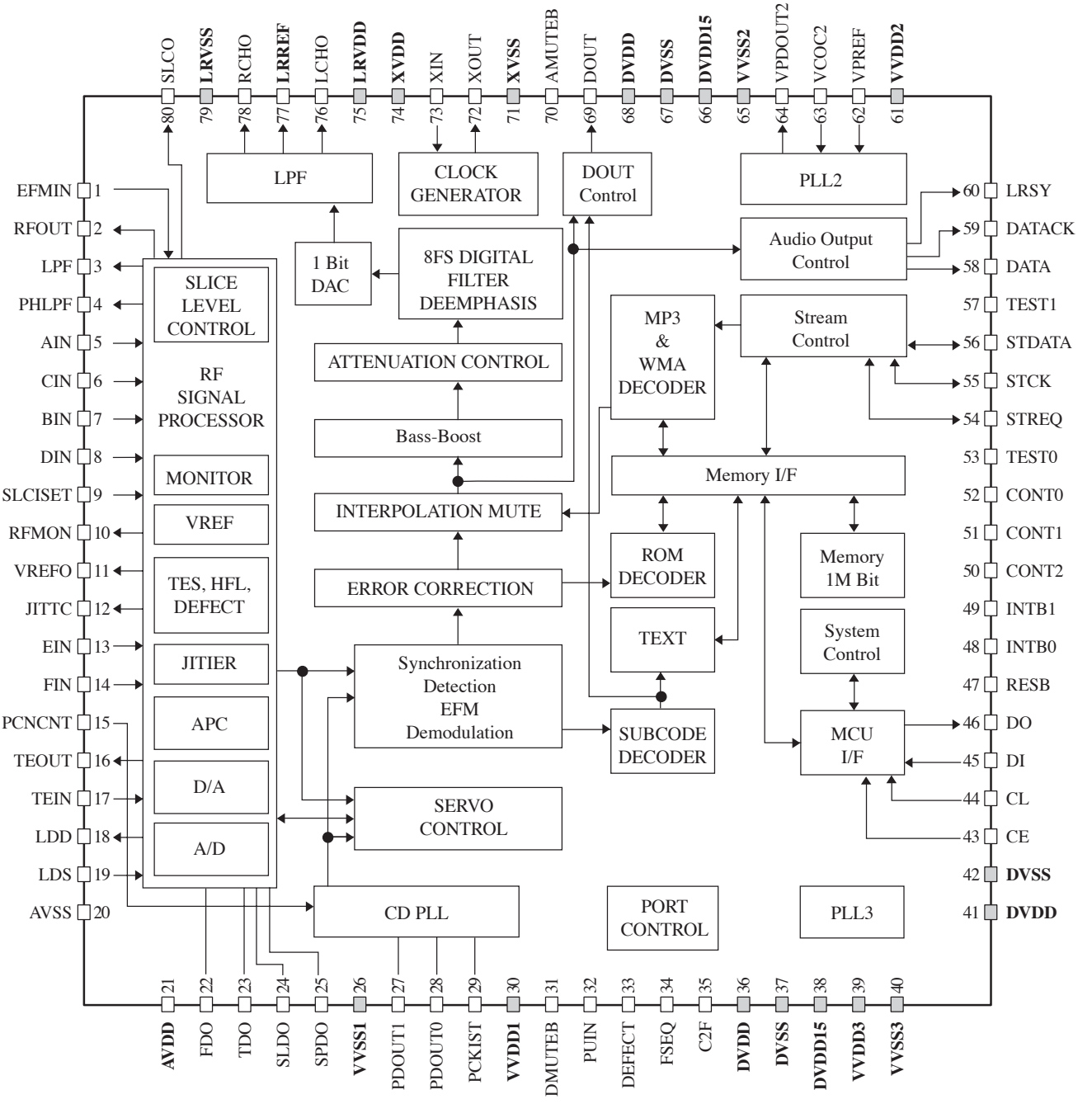
1. AK5358



2. BU4052



3. LC78692NW


SLCO 80
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LCHO 76
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XVDD 74
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XVSS 71
AMUTEB 70
DOUT 69
DVDD 68
DVSS 67
DVDD15 66
VVSS2 65
VPDOUT2 64
VCOC2 63
VPREF 62
VVDD2 61
EFMIN 1
RFOUT 2
LPF 3
PHLPF 4
AIN 5
CIN 6
BIN 7
DIN 8
SLCISET 9
RFMON 10
VREFO 11
JITTC 12
EIN 13
FIN 14
PCNCNT 15
TEOUT 16
TEIN 17
LDD 18
LDS 19
AVSS 20
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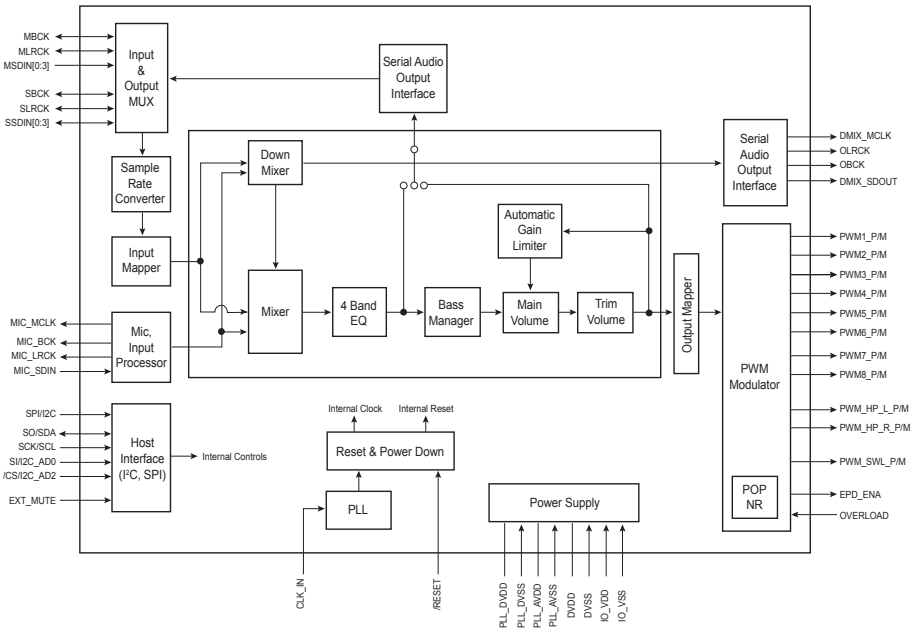
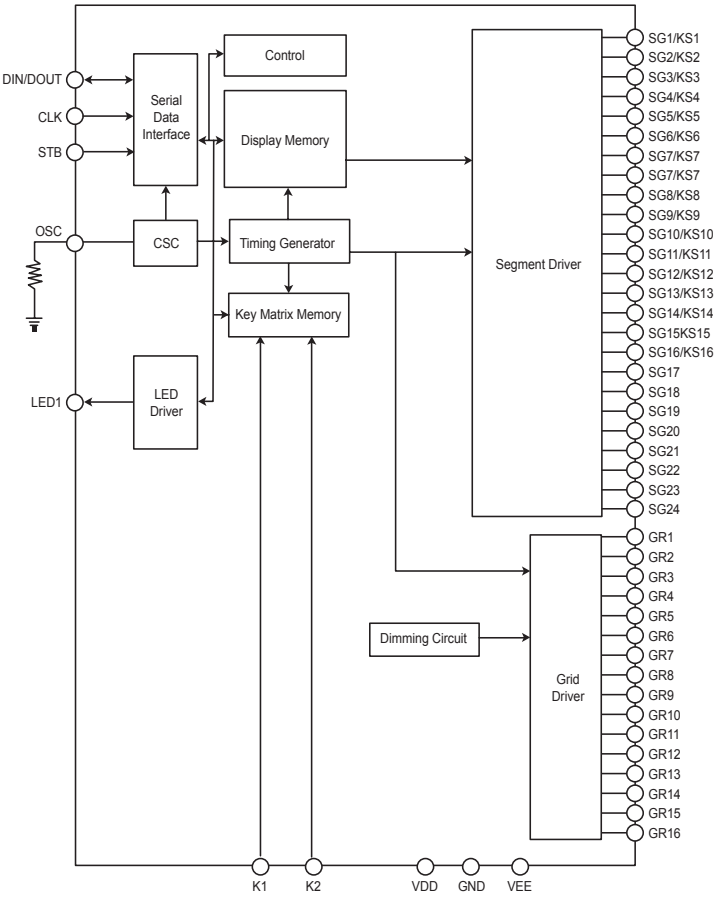
STDATA 56
STCK 55
STREQ 54
TEST0 53
CONT0 52
CONT1 51
CONT2 50
INTB1 49
INTB0 48
RESB 47
DO 46
DI 45
CL 44
CE 43
DVSS 42
DVDD 41
AVDD 21
FDO 22
TDO 23
SLDO 24
SPDO 25
VVSS1 26
PDOUT1 27
PDOUT0 28
PCKIST 29
VVDD1 30
DMUTEB 31
PUIN 32
DEFECT 33
FSEQ 34
C2F 35
DVDD 36
DVSS 37
DVDD15 38
VVDD3 39
VVSS3 40
LPF
CLOCK GENERATOR
DOUT Control
PLL2
1 Bit DAC
8FS DIGITAL FILTER DEEMPHASIS
Audio Output Control
SLICE LEVEL CONTROL
RF SIGNAL PROCESSOR
MONITOR
VREF
TES, HFL, DEFECT
JITIER
APC
D/A
A/D
ATTENUATION CONTROL
Bass-Boost
INTERPOLATION MUTE
ERROR CORRECTION
Synchronization Detection EFM Demodulation
SERVO CONTROL
CD PLL
MP3 & WMA DECODER
Stream Control
Memory I/F
ROM DECODER
TEXT
SUBCODE DECODER
Memory 1M Bit
System Control
MCU I/F
PORT CONTROL
PLL3

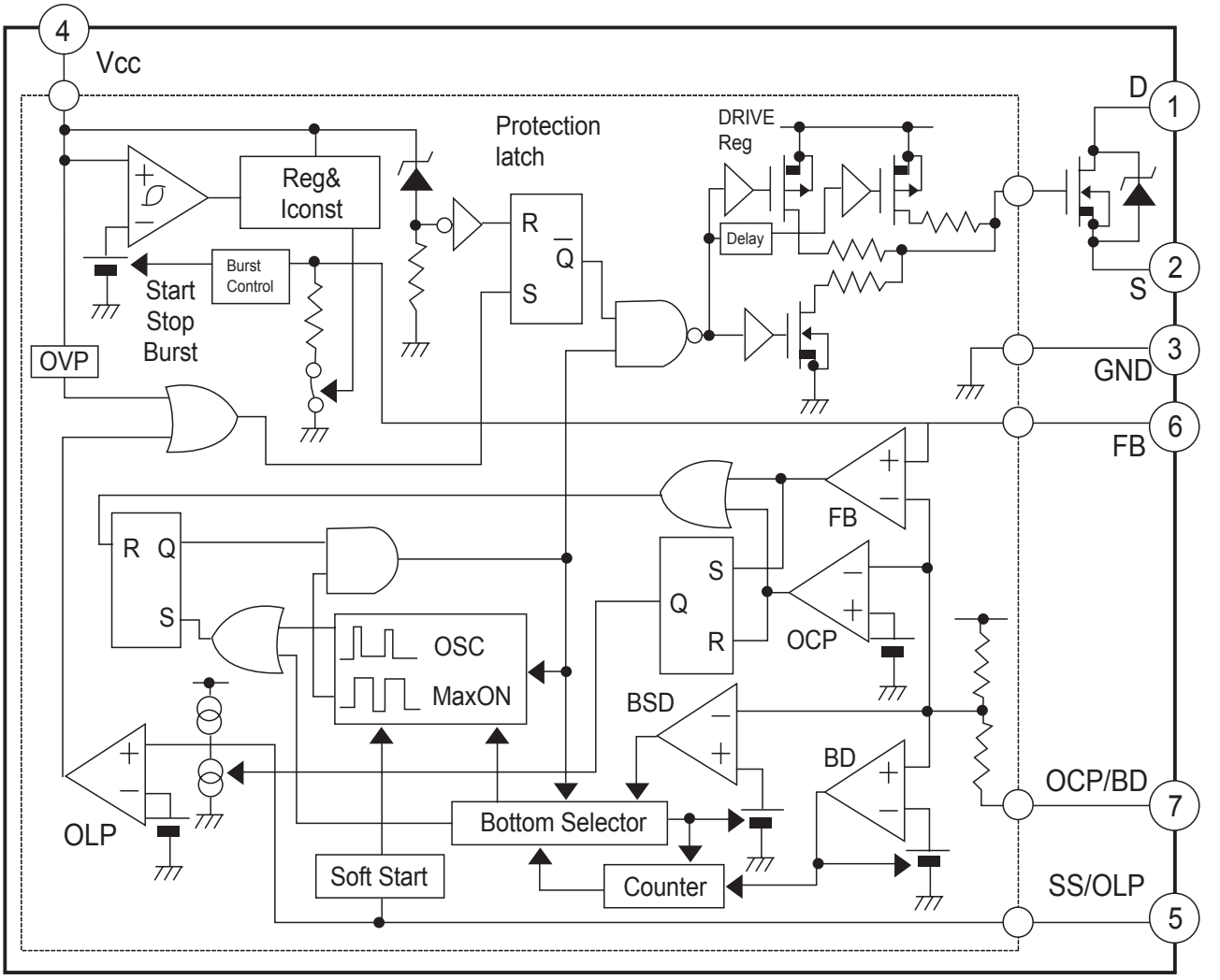
4. PS9829B



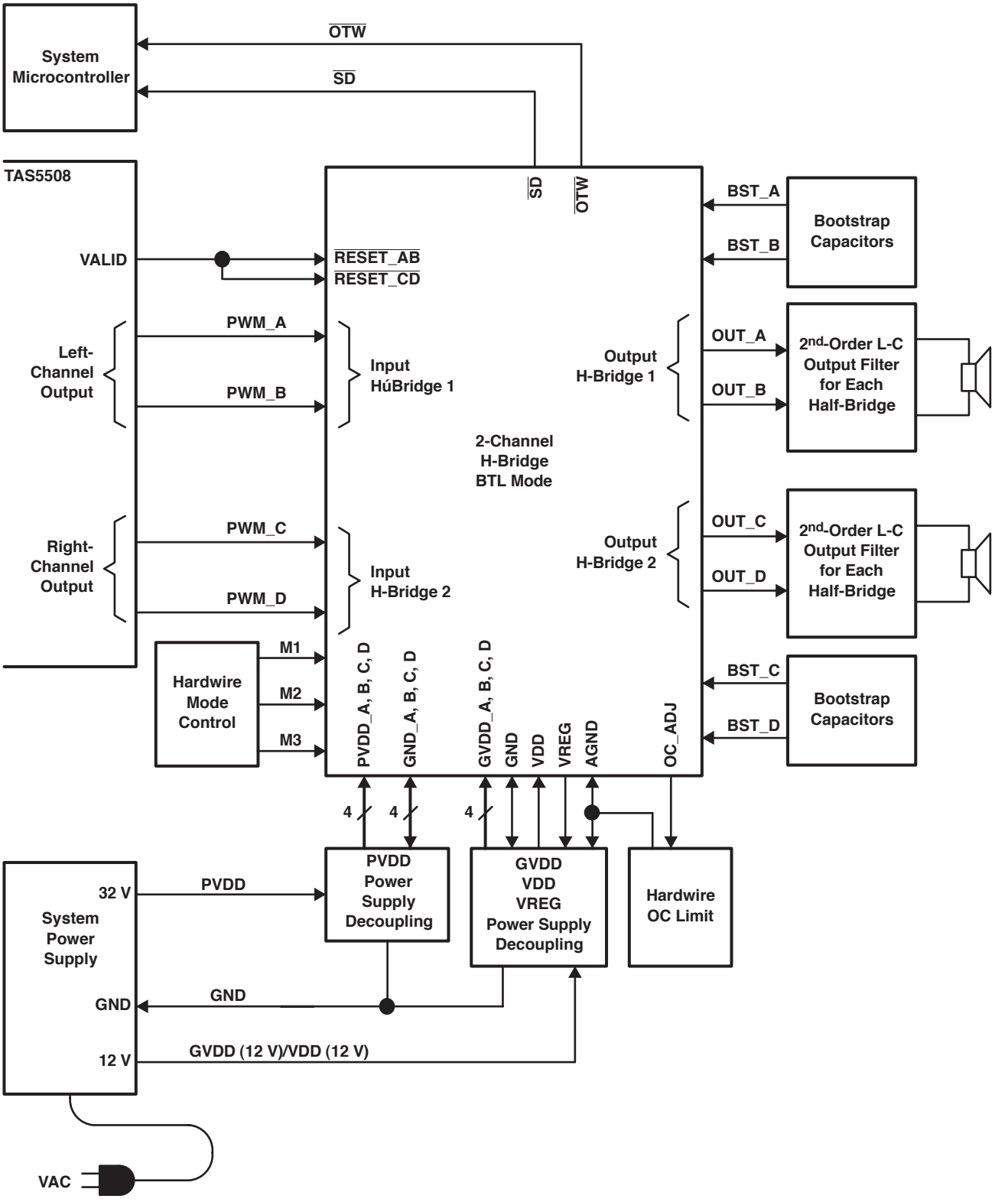
5. PT6324



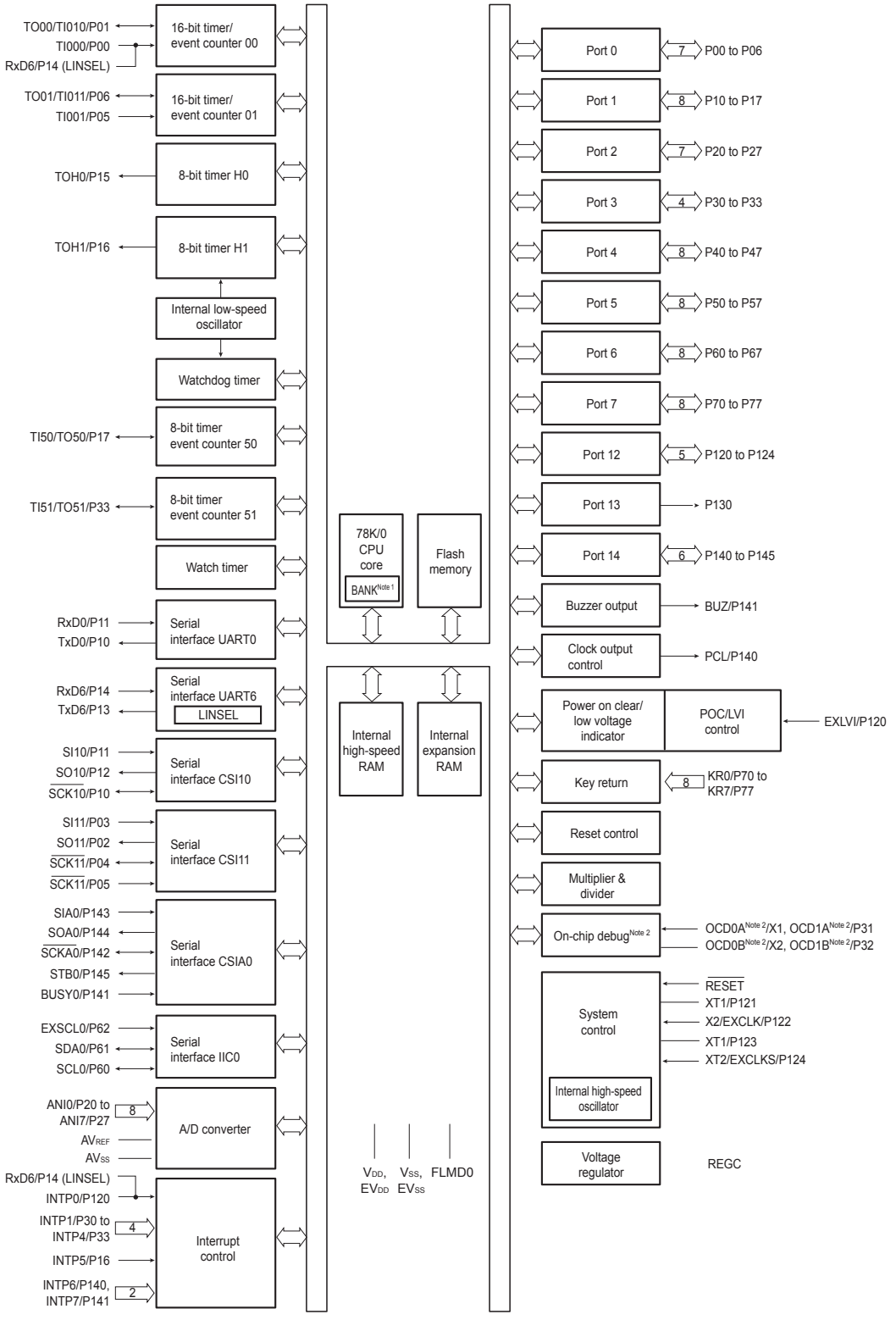
6. STR-W6753


4
Vcc
D
1
Protection
latch
DRIVE
Reg
Reg&
Iconst
R
Q
S
Delay
Burst
Control
Start
Stop
Burst
OVP
S
2
GND
3
FB
6
FB
R Q
S
S
Q
R
OSC
MaxON
OCP
BSD
BD
OCP/BD
7
OLP
Bottom Selector
Soft Start
Counter
SS/OLP
5

7. TAS5142

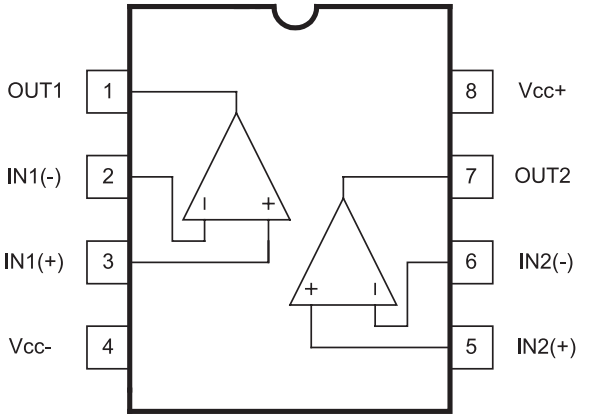

System Microcontroller
OTW
SD
TAS5508
SD
OTW
BST_A
BST_B
Bootstrap Capacitors
VALID
RESET_AB
RESET_CD
PWM_A
PWM_B
Left-Channel Output
Input HúBridge 1
Output H-Bridge 1
OUT_A
OUT_B
2nd-Order L-C Output Filter for Each Half-Bridge
2-Channel H-Bridge BTL Mode
PWM_C
PWM_D
Right-Channel Output
Input H-Bridge 2
Output H-Bridge 2
OUT_C
OUT_D
2nd-Order L-C Output Filter for Each Half-Bridge
Hardwire Mode Control
M1
M2
M3
PVDD_A, B, C, D
GND_A, B, C, D
GVDD_A, B, C, D
GND
VDD
VREG
AGND
OC_ADJ
BST_C
BST_D
Bootstrap Capacitors
4
4
4
PVDD Power Supply Decoupling
GVDD VDD VREG Power Supply Decoupling
Hardwire OC Limit
32 V
PVDD
System Power Supply
GND
GND
12 V
GVDD (12 V)/VDD (12 V)
VAC

8. U1739EJ2V1UD00/KF2_E

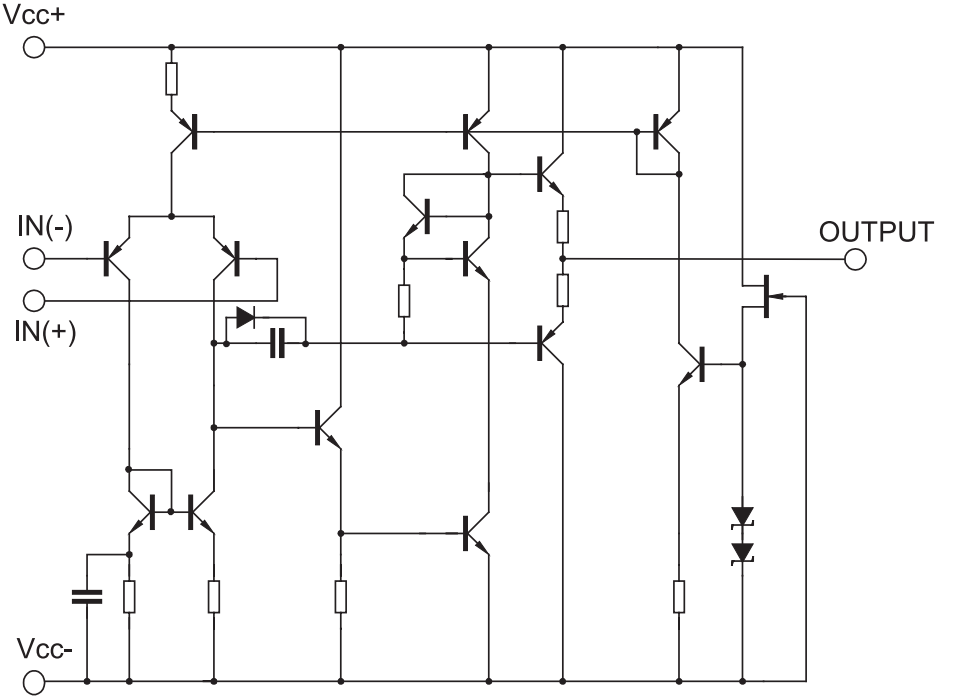


9. UTC MC4580

9-1. PIN CONFIGURATION



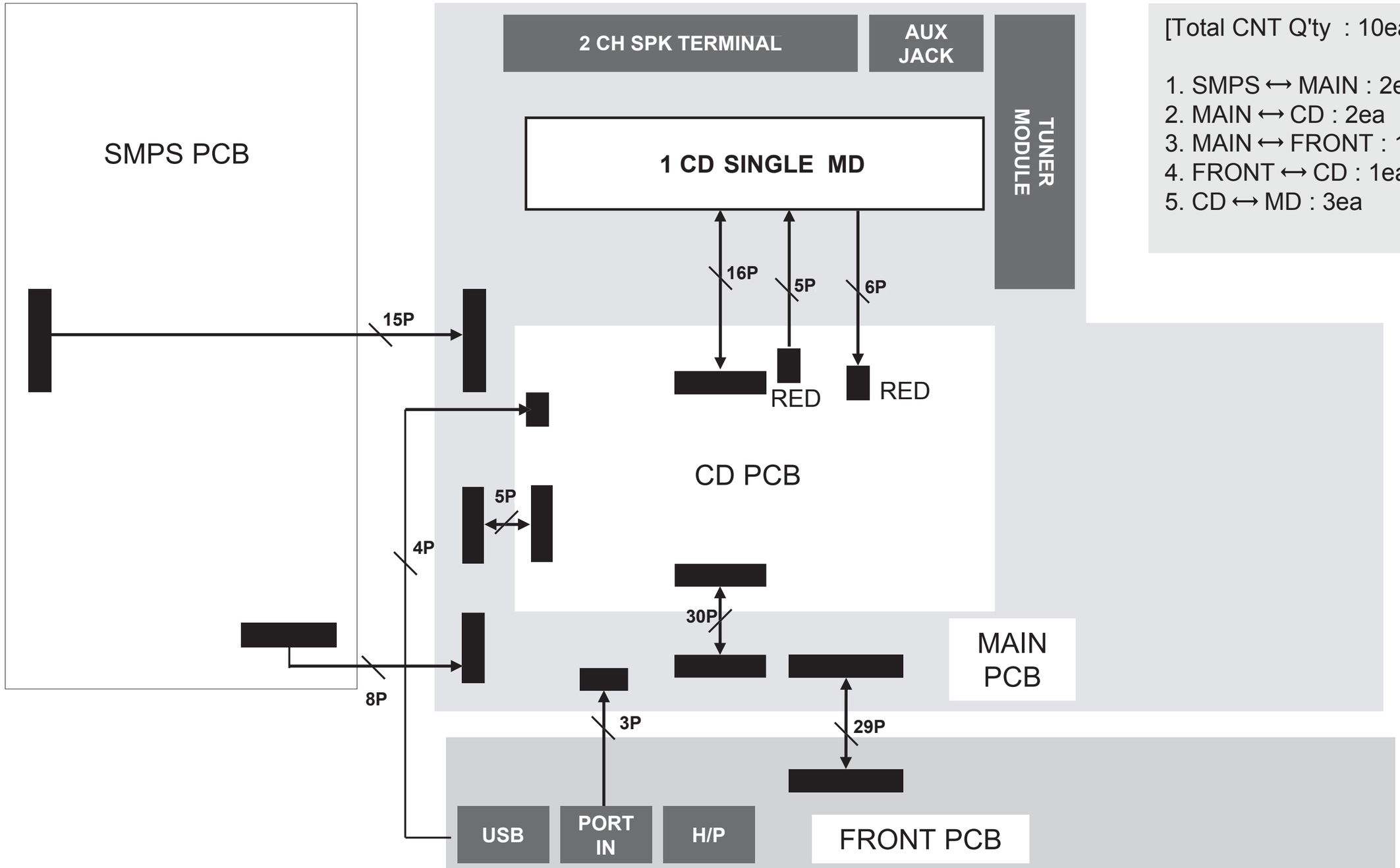
9-2. TEST CIRCUIT



ABSOLUTE MAXIMUM RATINGS (Ta=25 C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+/V^-	±18	V
Input Voltage	V_{IC}	±15	V
Differential Input Voltage	V_{ID}	±30	V
Output Current	Io	±50	mA
Power Dissipation	P_D	300 (SOP-8) 800 (DIP-8) 250(TSSOP-8)	mW
Operating Temperature Range	Topr	-40 to+85	℃
Storage Temperature Range	Tstg	-40 to +125	℃

WIRING DIAGRAM

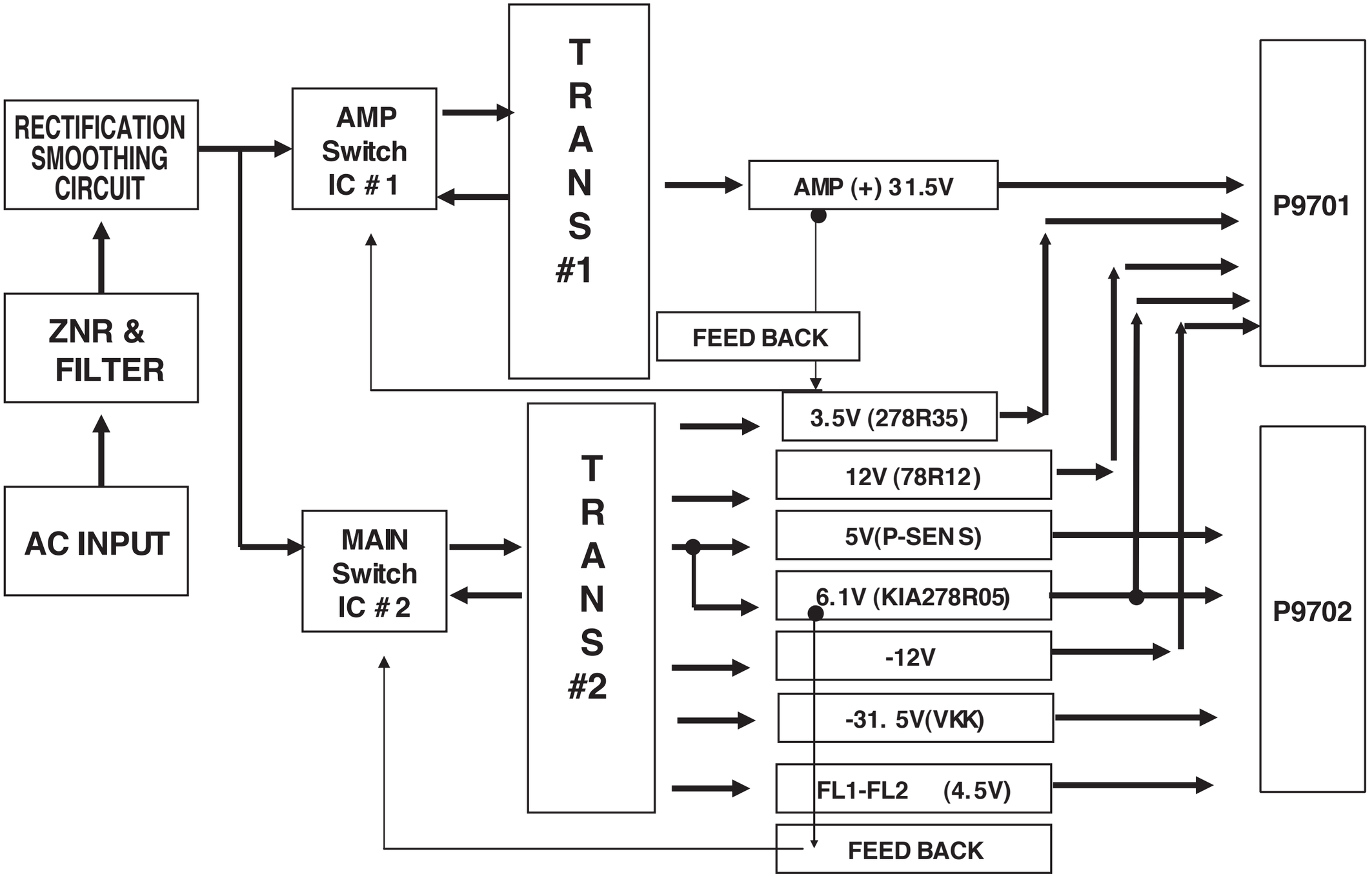


[Total CNT Q'ty : 10ea]

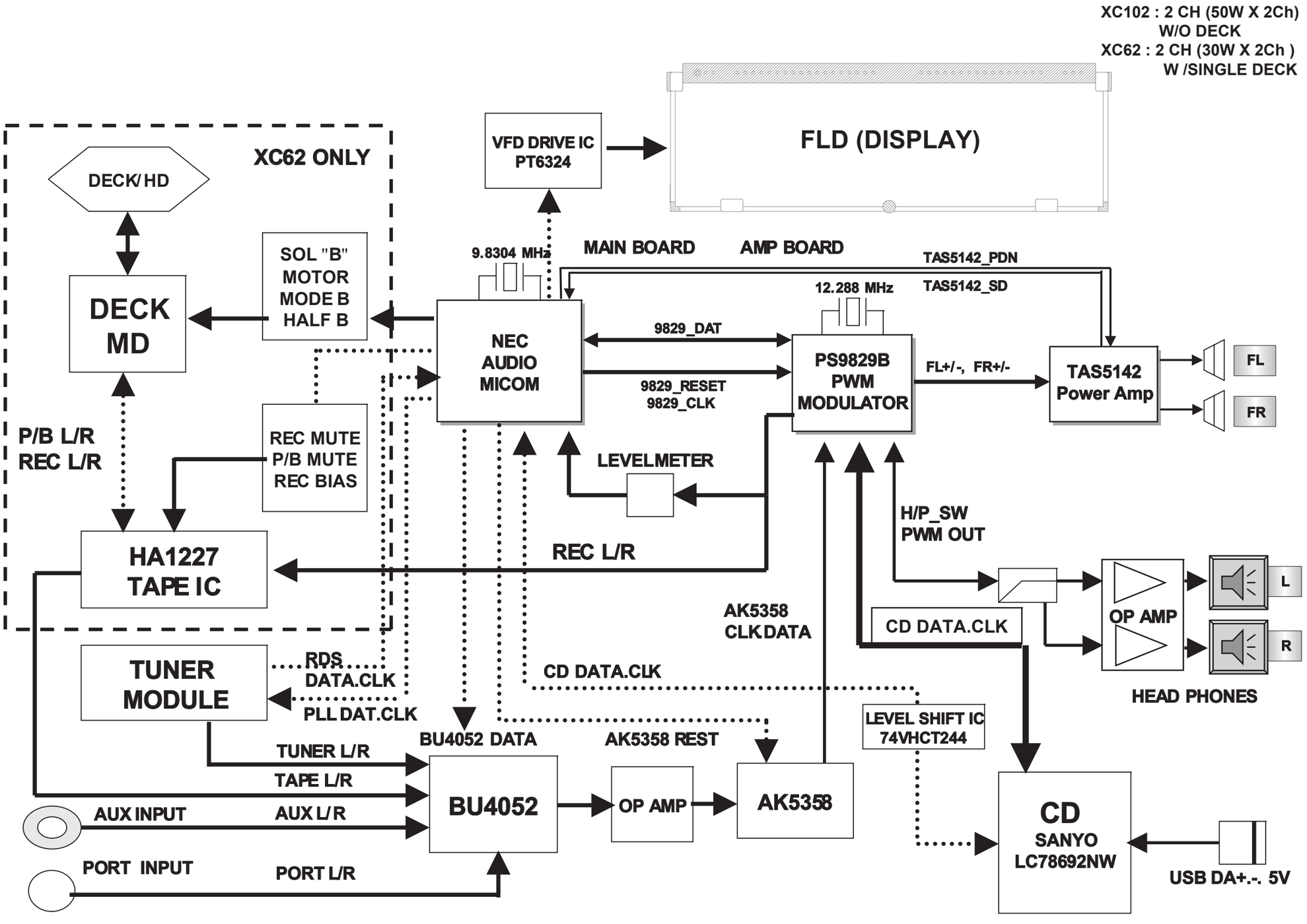
1. SMPS ↔ MAIN : 2ea
2. MAIN ↔ CD : 2ea
3. MAIN ↔ FRONT : 1ea
4. FRONT ↔ CD : 1ea
5. CD ↔ MD : 3ea

BLOCK DIAGRAMS

1. SMPS BLOCK DIAGRAM



2. MAIN & FRONT BLOCK DIAGRAM



SCHEMATIC DIAGRAMS

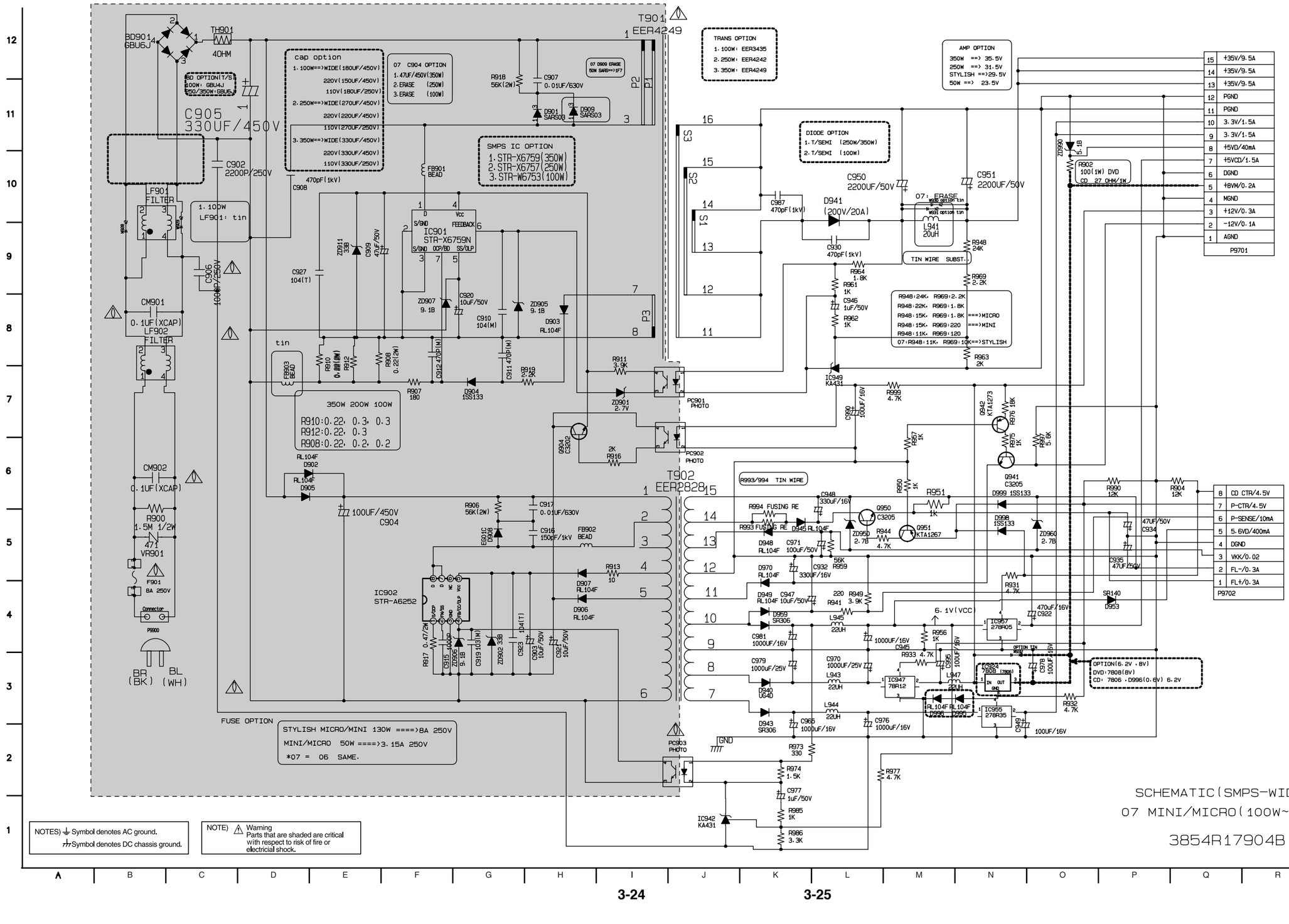
1. SMPS SCHEMATIC DIAGRAM

IMPORTANT SAFETY

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 :

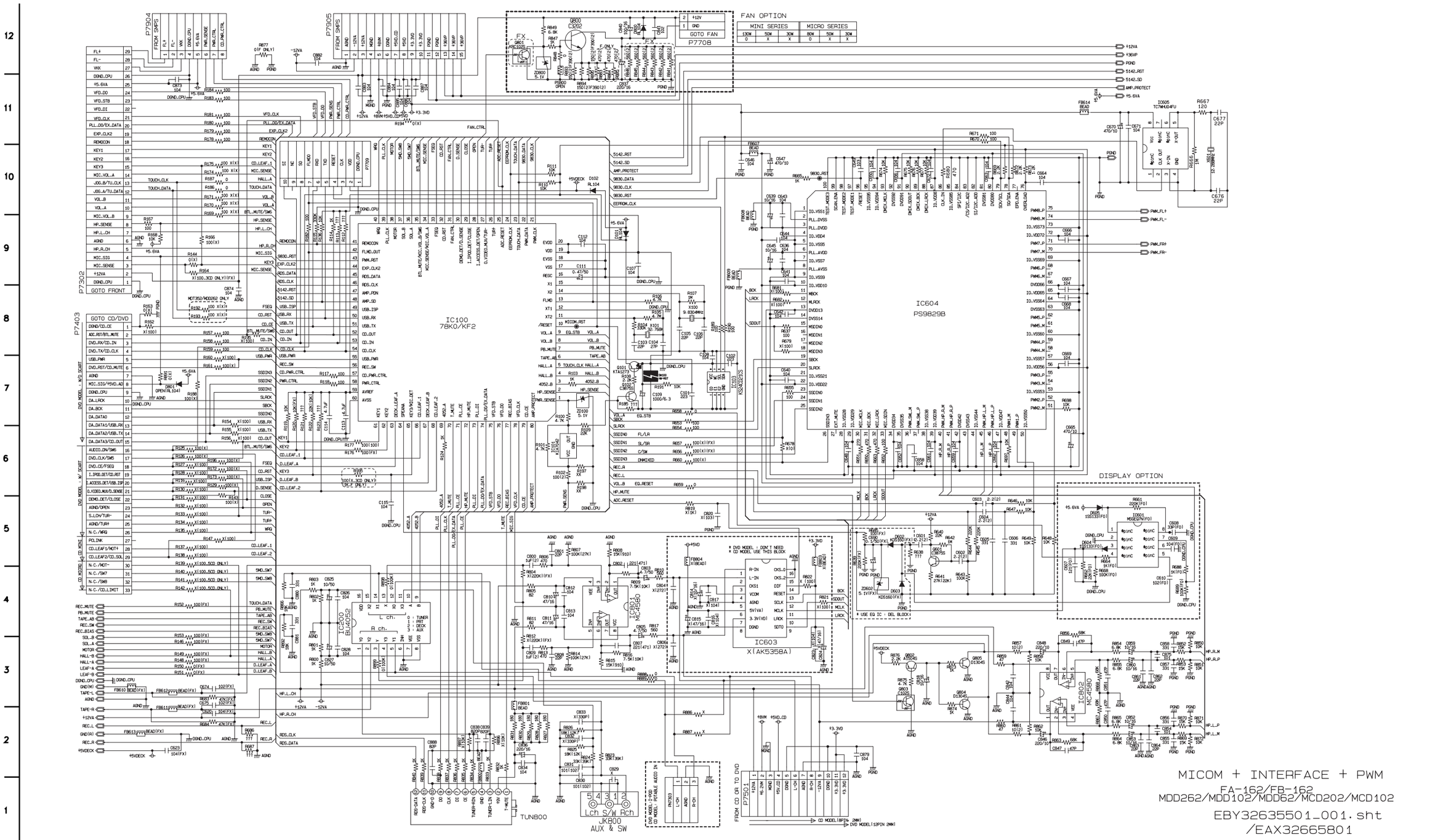
1. Shaded(■) parts are critical for safety. Replace only with specified part number.
2. Voltages are DC-measured with a digital voltmeter during Play mode.



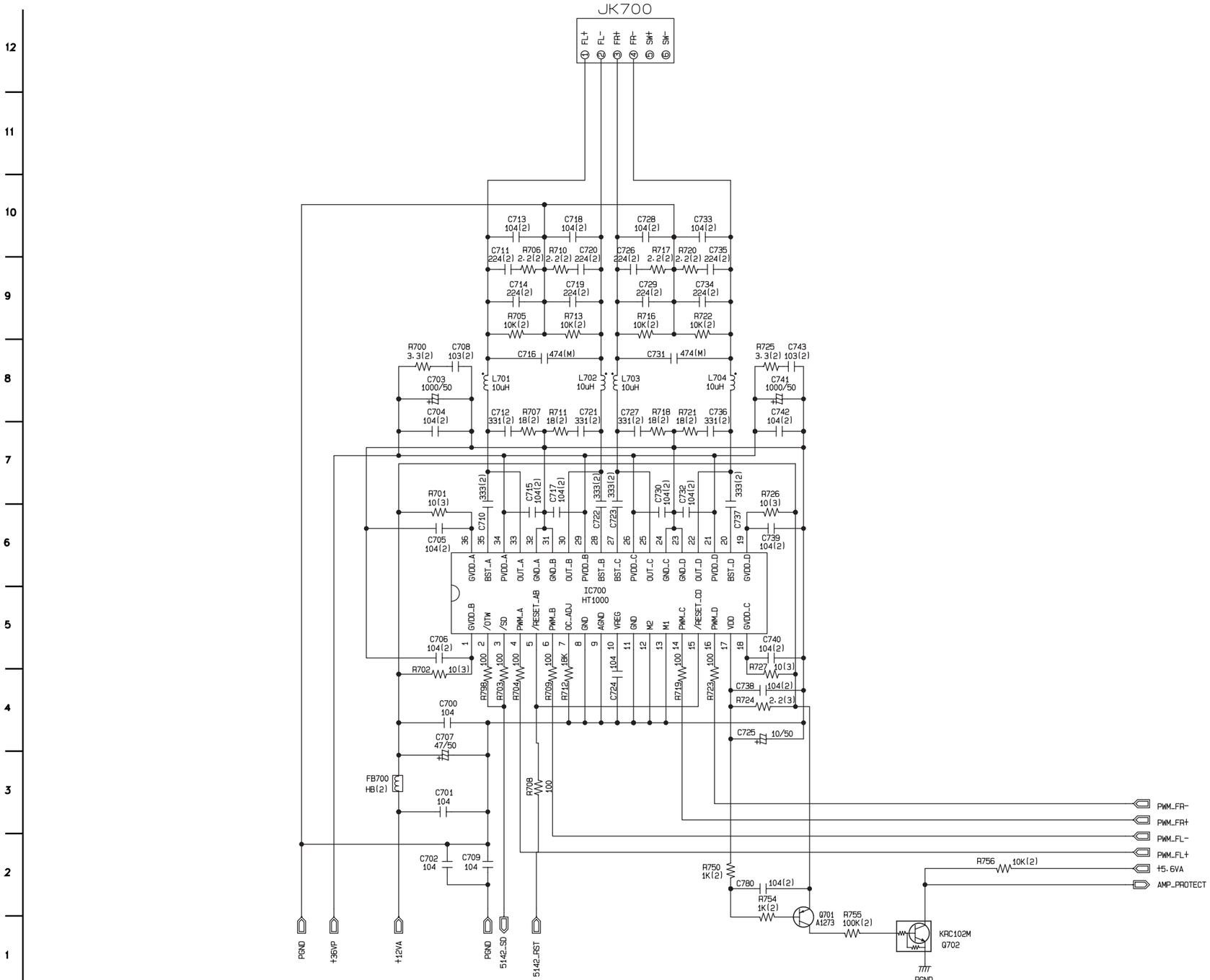
NOTES) ⏚ Symbol denotes AC ground.
⏚ Symbol denotes DC chassis ground.

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

2. MAIN SCHEMATIC DIAGRAM

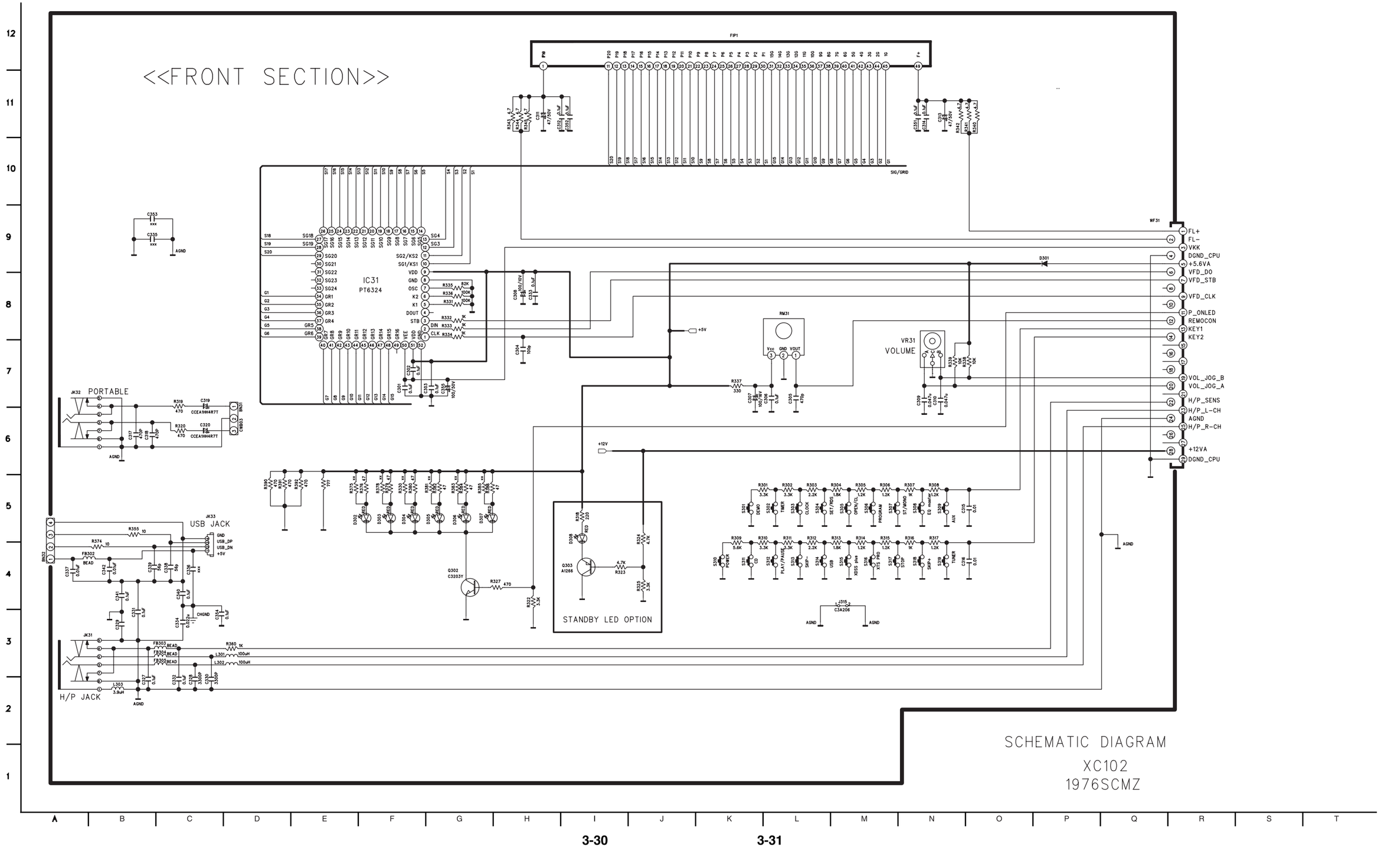


3. AMP SCHEMATIC DIAGRAM



2CH. AMP
FA-162/FB-162
MDD262/MDD102/MDD62/MCD202/MCD102
EBY32635501_002.Sht
/EAX32665801

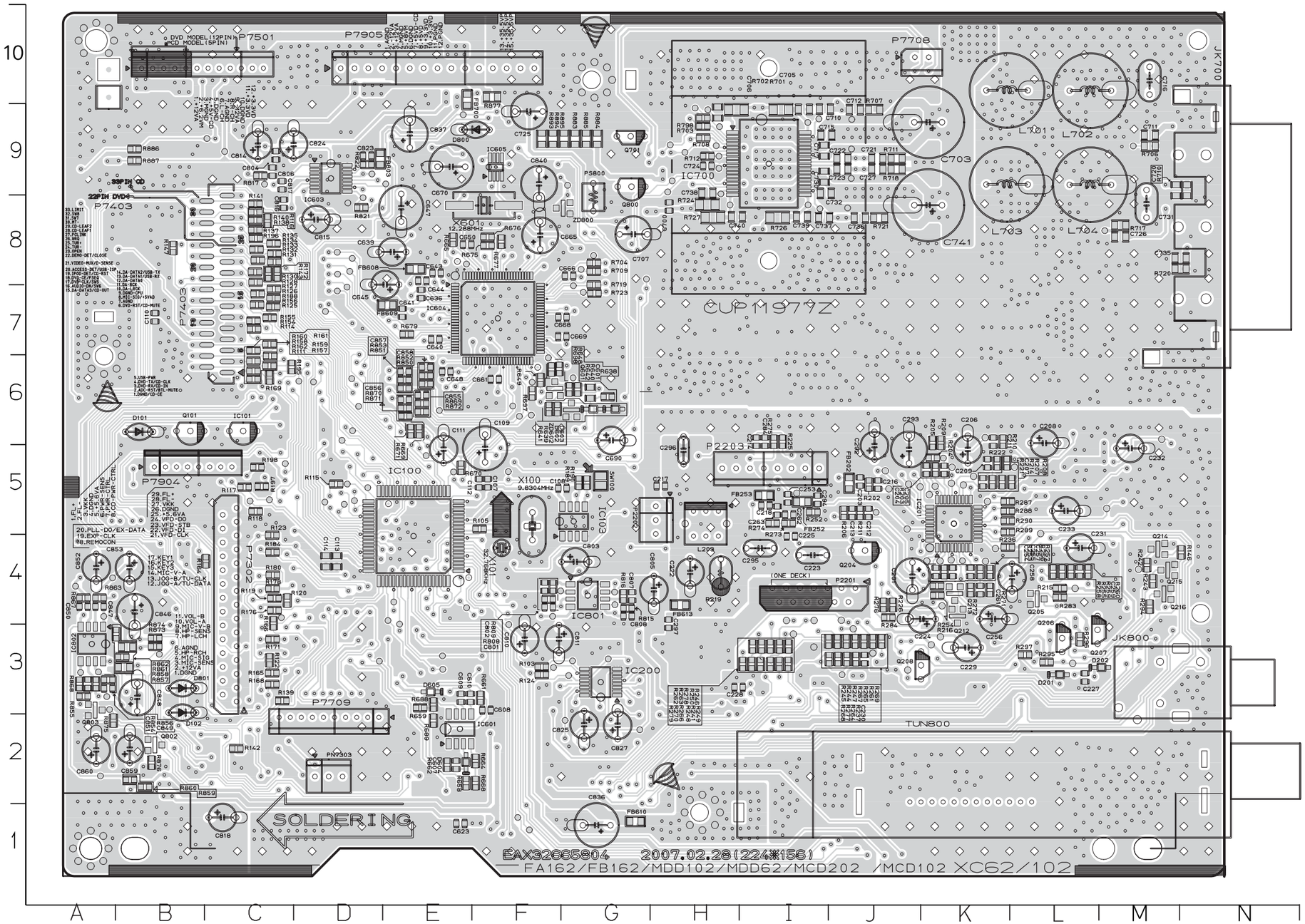
4. FRONT SCHEMATIC DIAGRAM



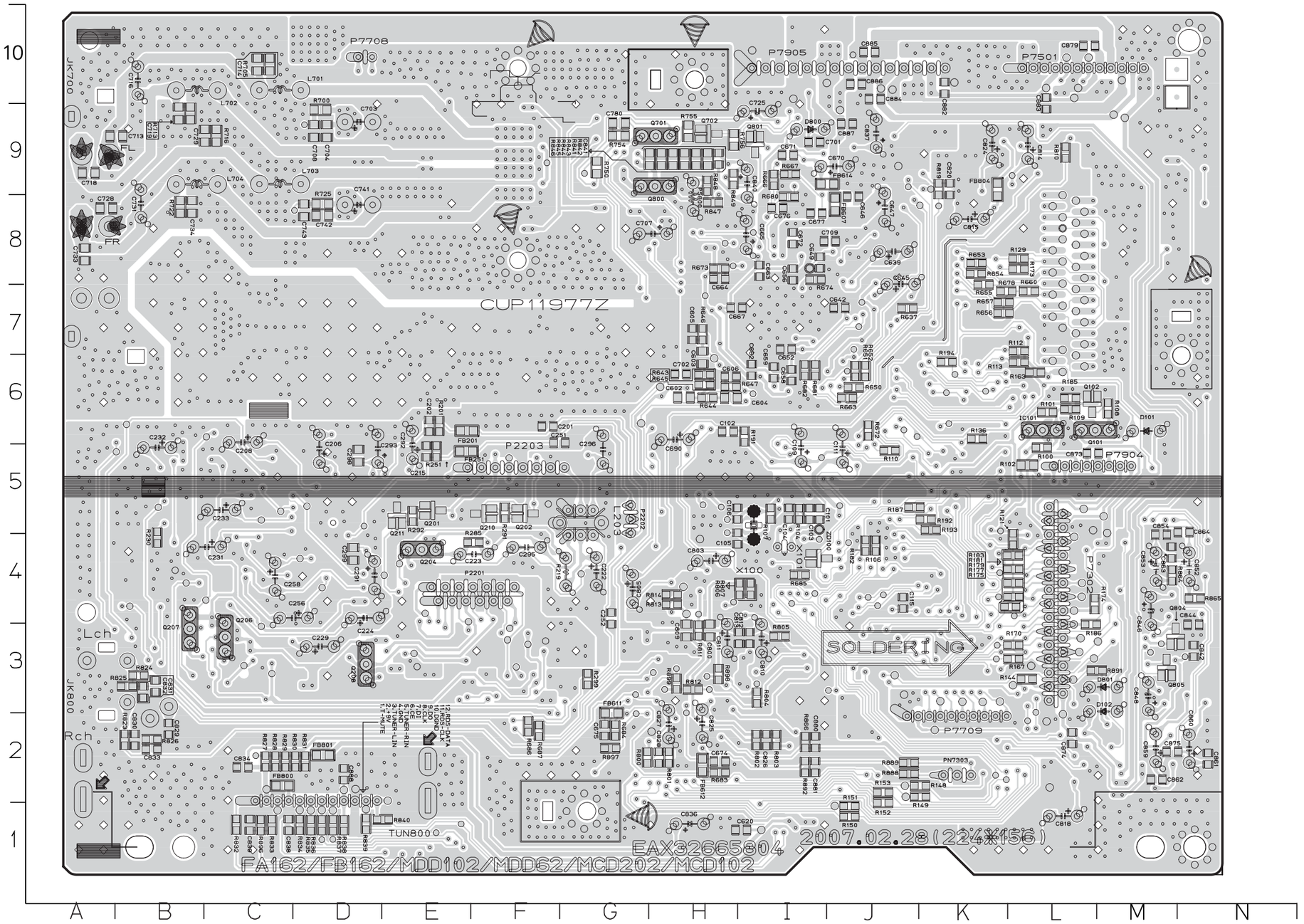
PRINTED CIRCUIT BOARD DIAGRAMS

1. MAIN P.C.BOARD

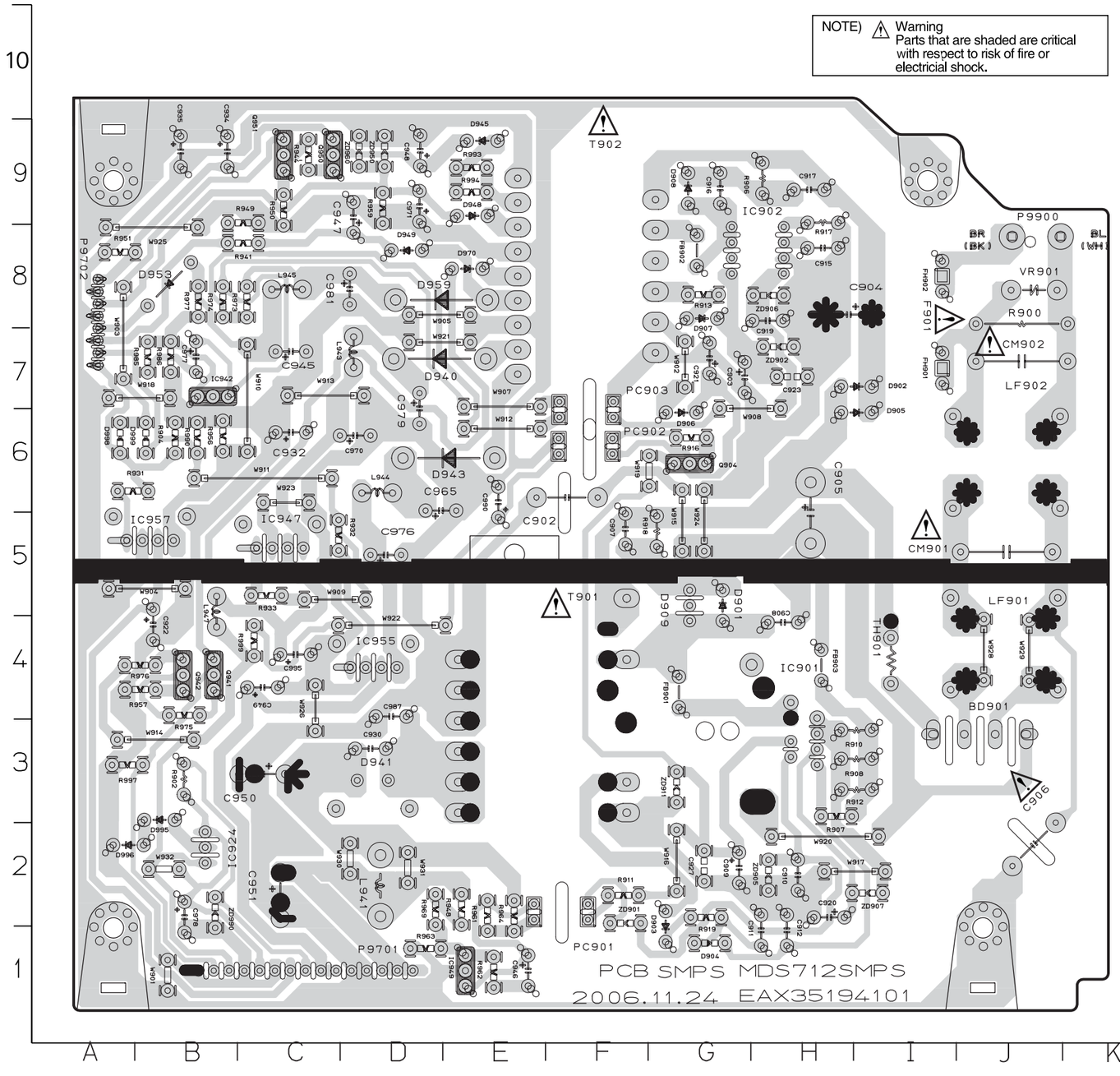
(TOP VIEW)



MAIN P.C.BOARD
(BOTTOM VIEW)

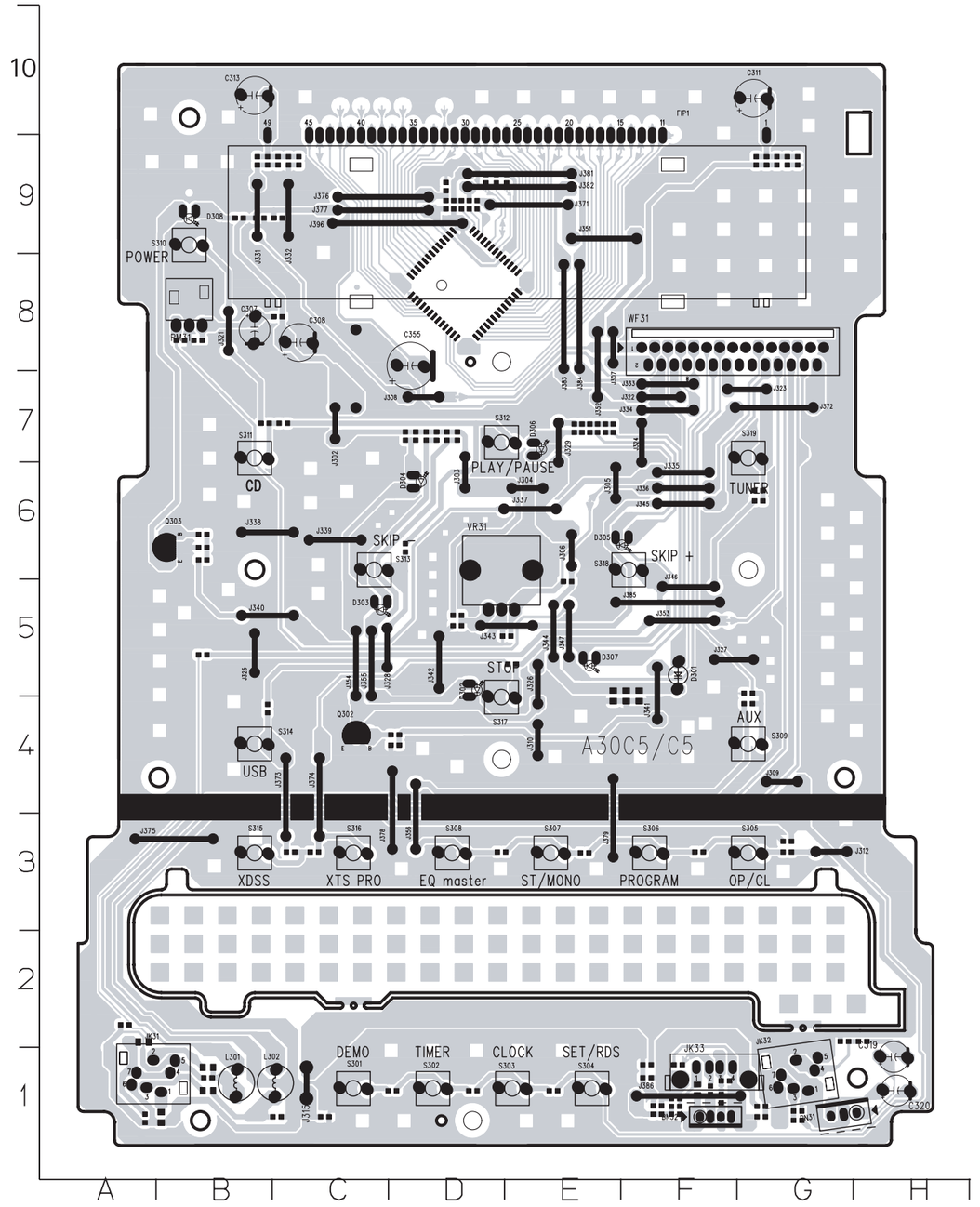


2. SMPS P.C.BOARD

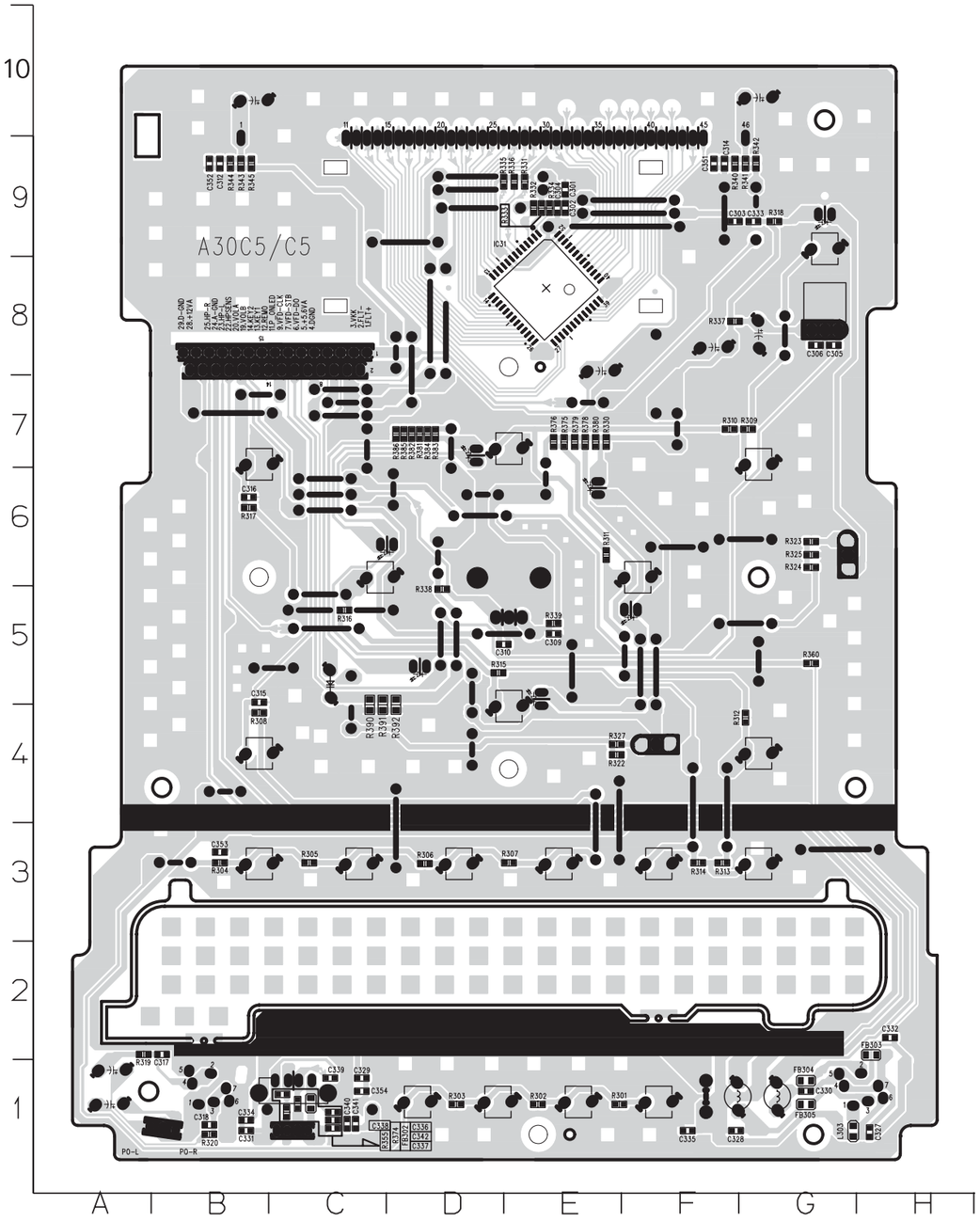


3. FRONT P.C.BOARD

(TOP VIEW)



(BOTTOM VIEW)



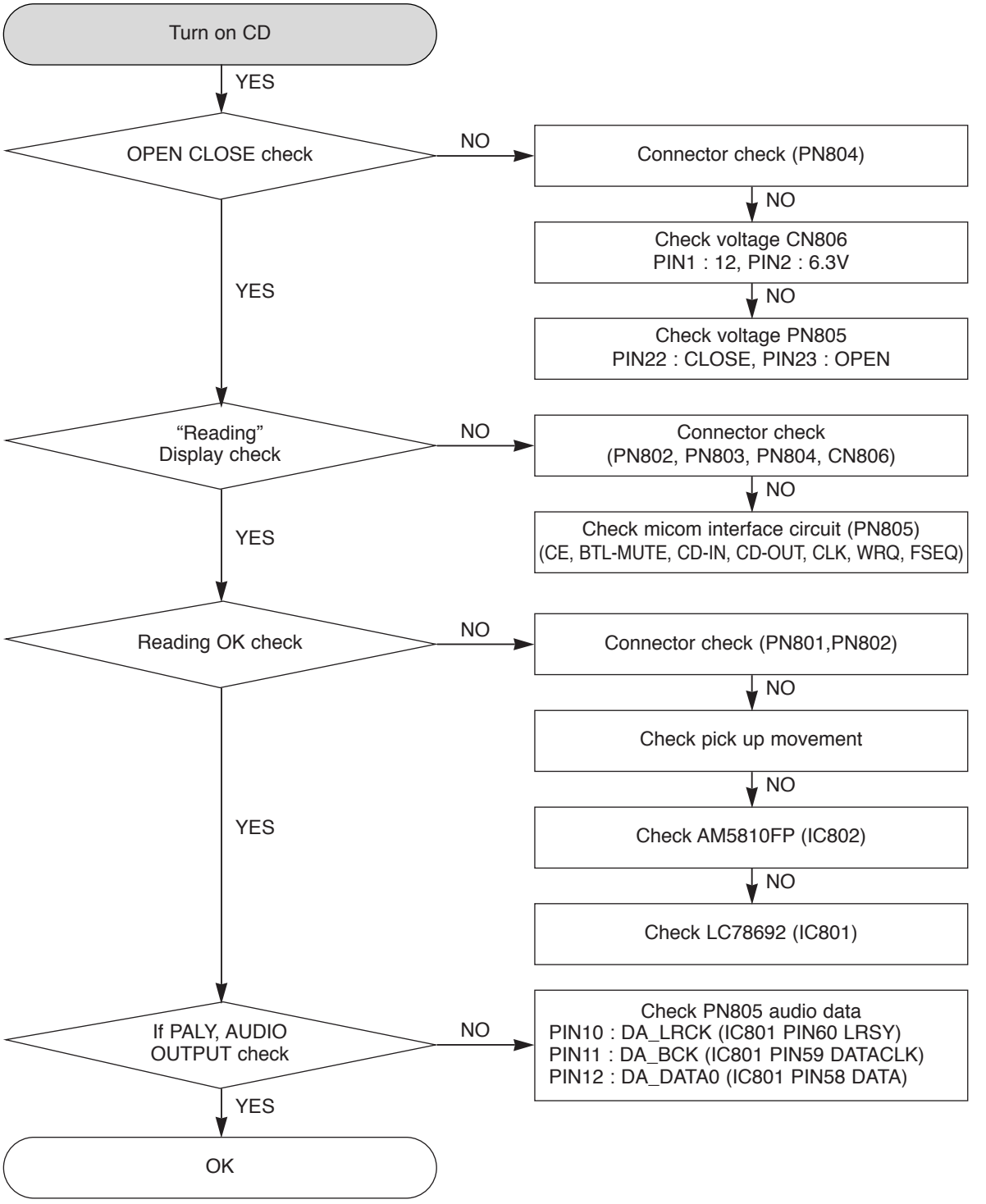
MEMO

MEMO

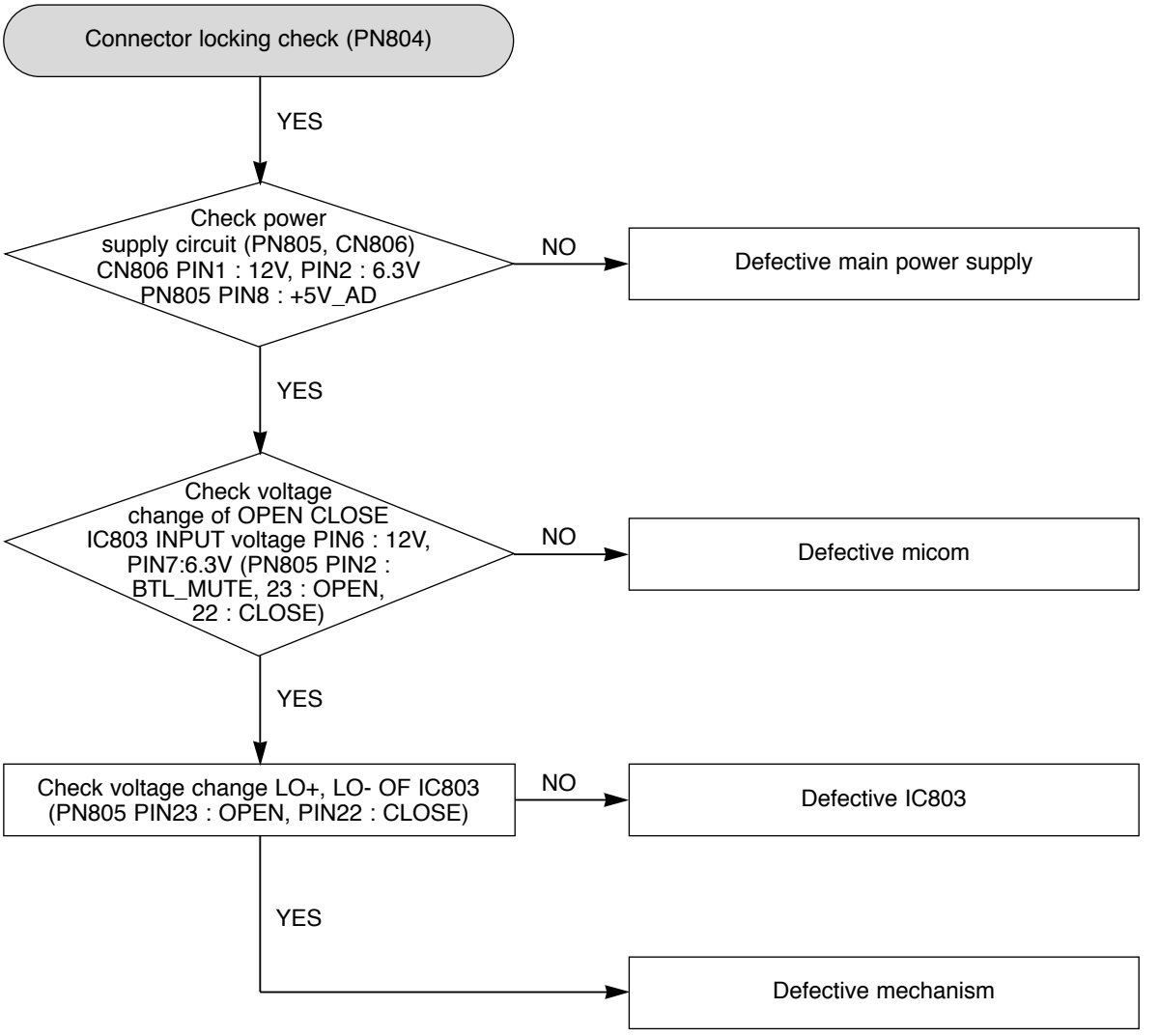
SECTION 4 CD PART ELECTRICAL

CD ELECTRICAL TROUBLESHOOTING GUIDE

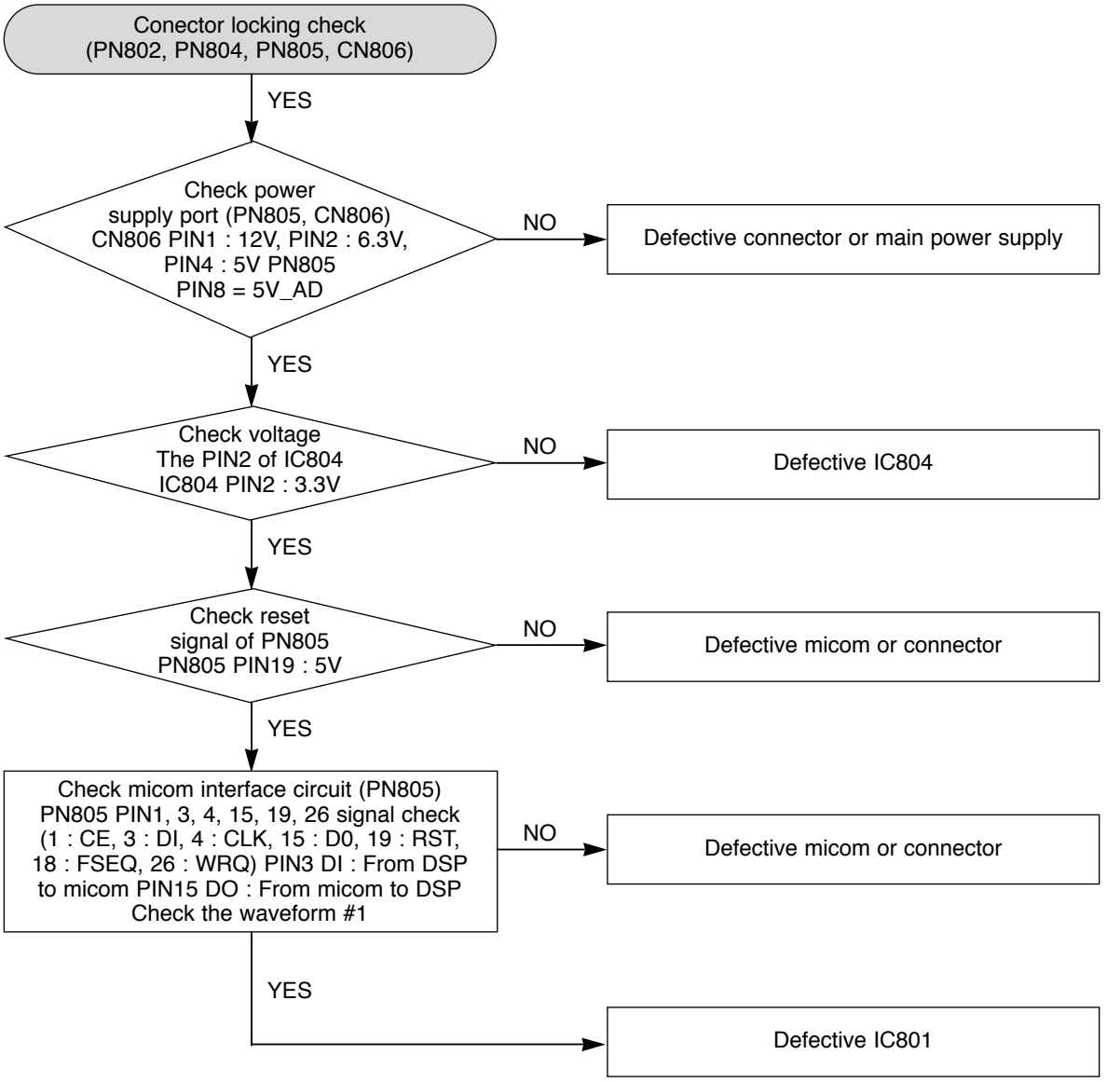
1. CD PART TROUBLESHOOTING



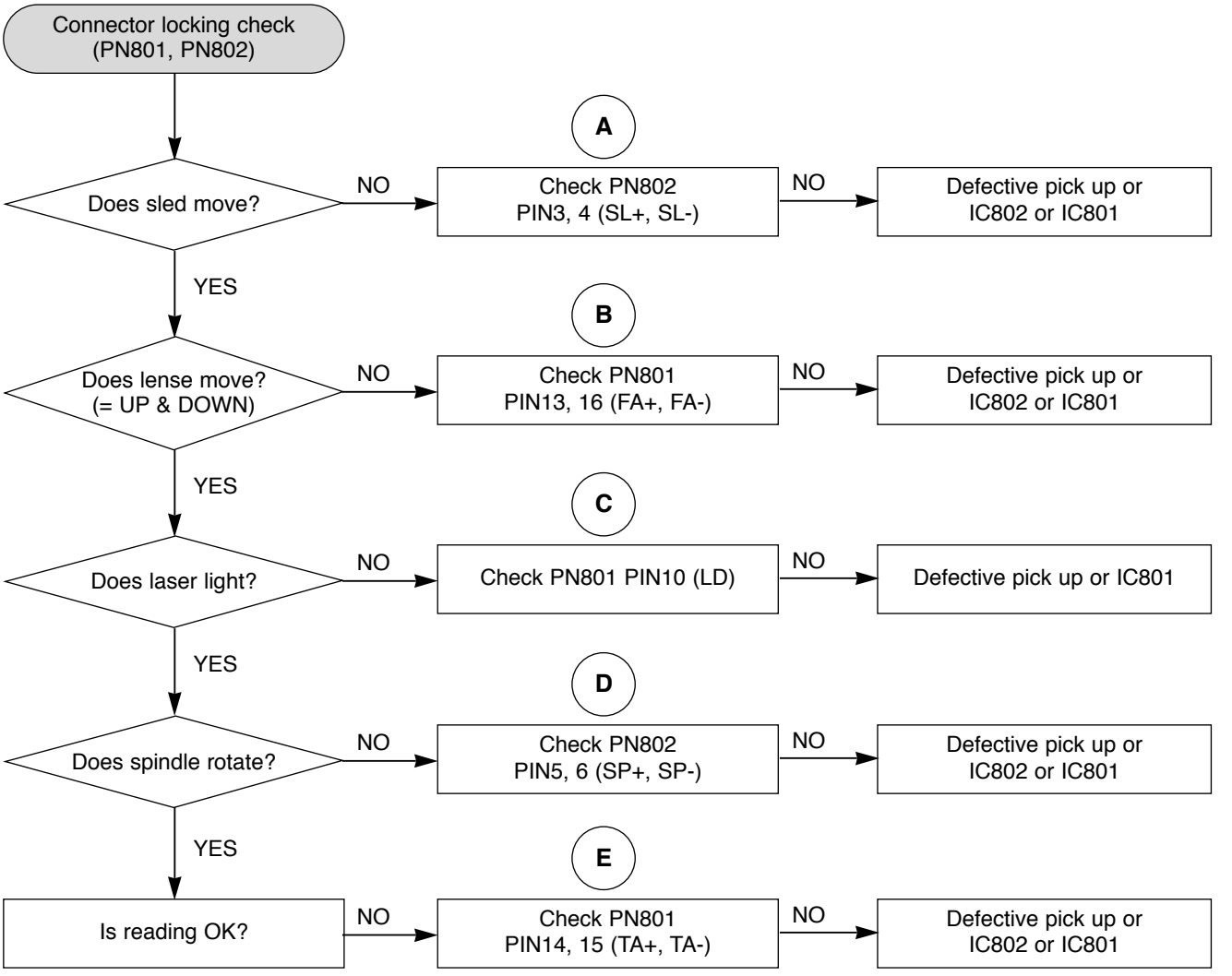
1-1. OPEN CLOSE NG



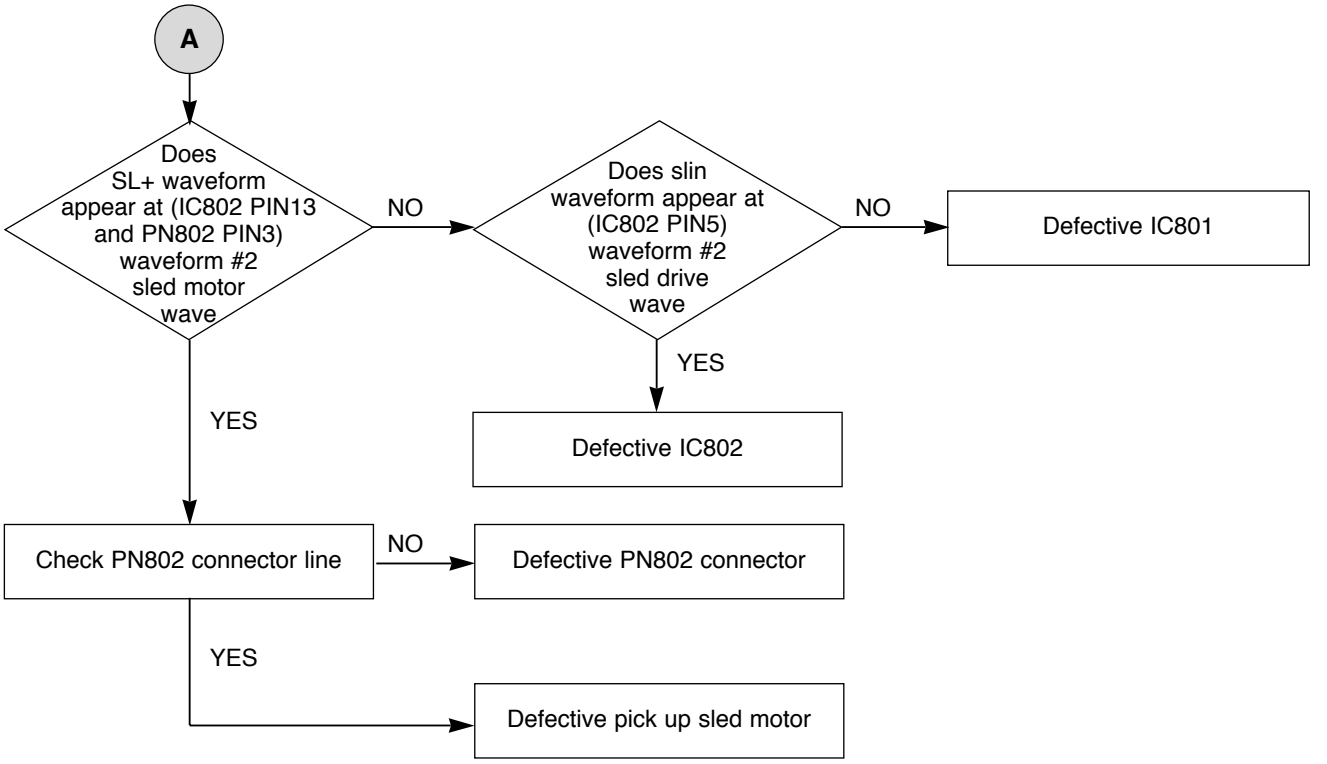
1-2. “READING” DISPLAY CHECK (= ONLY “CD” DISPLAY)



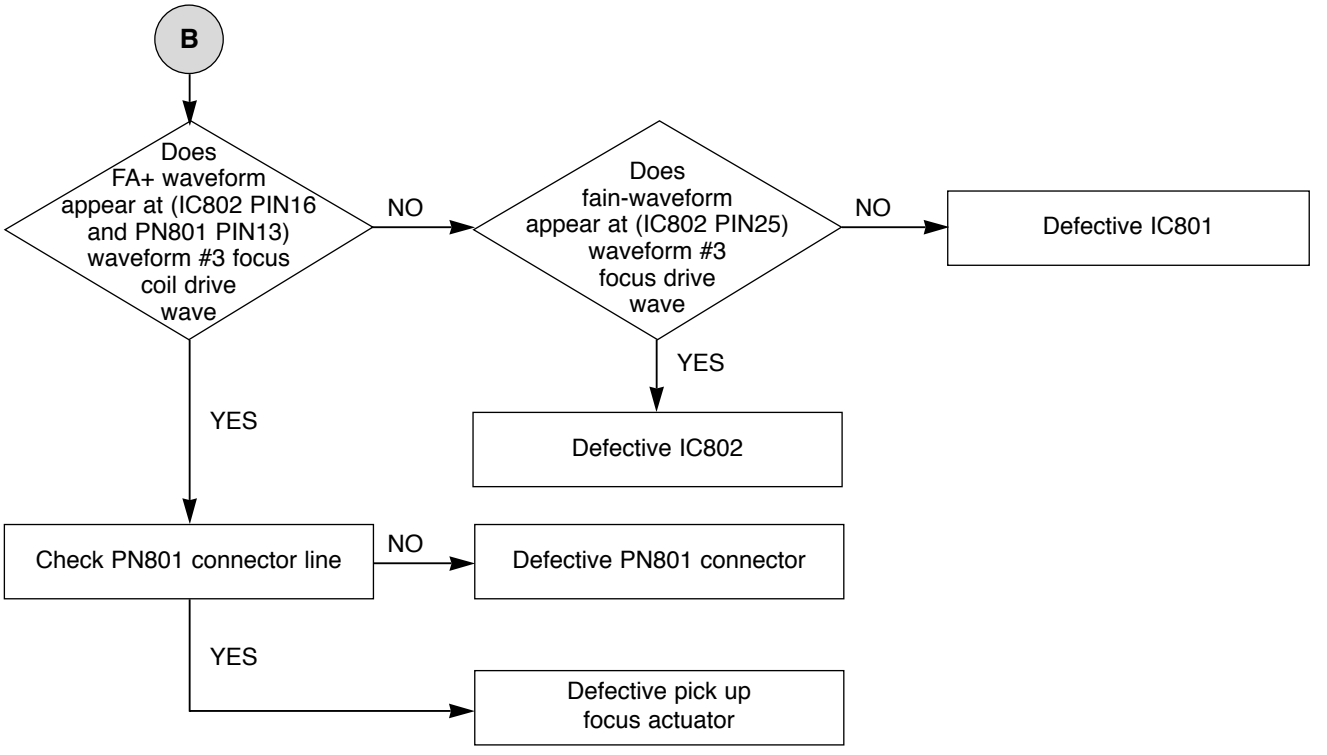
1-3. READING OK CHECK (= “NO DISC” DISPLAY)



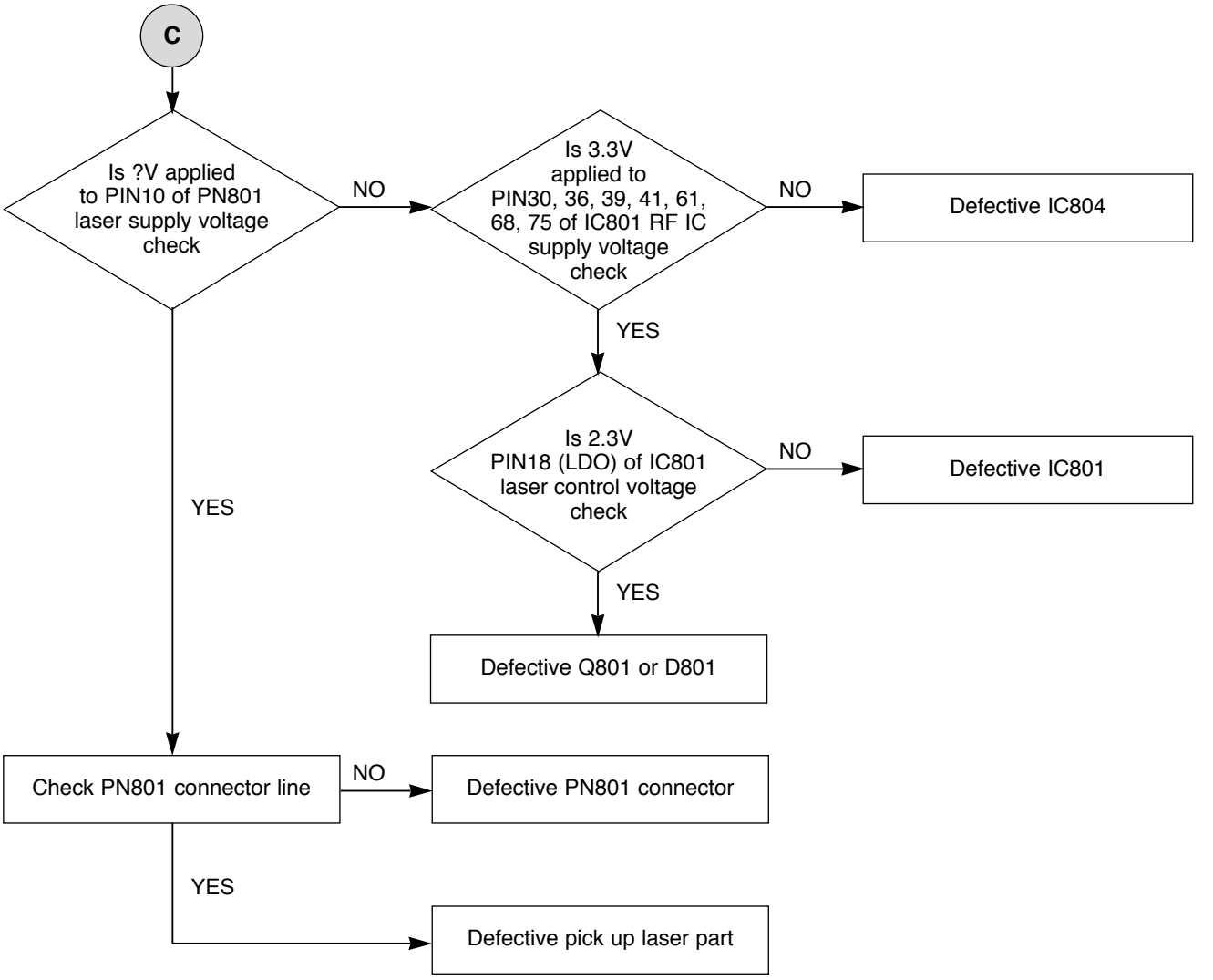
1-4. READING OK CHECK #A (= “NO DISC” DISPLAY)



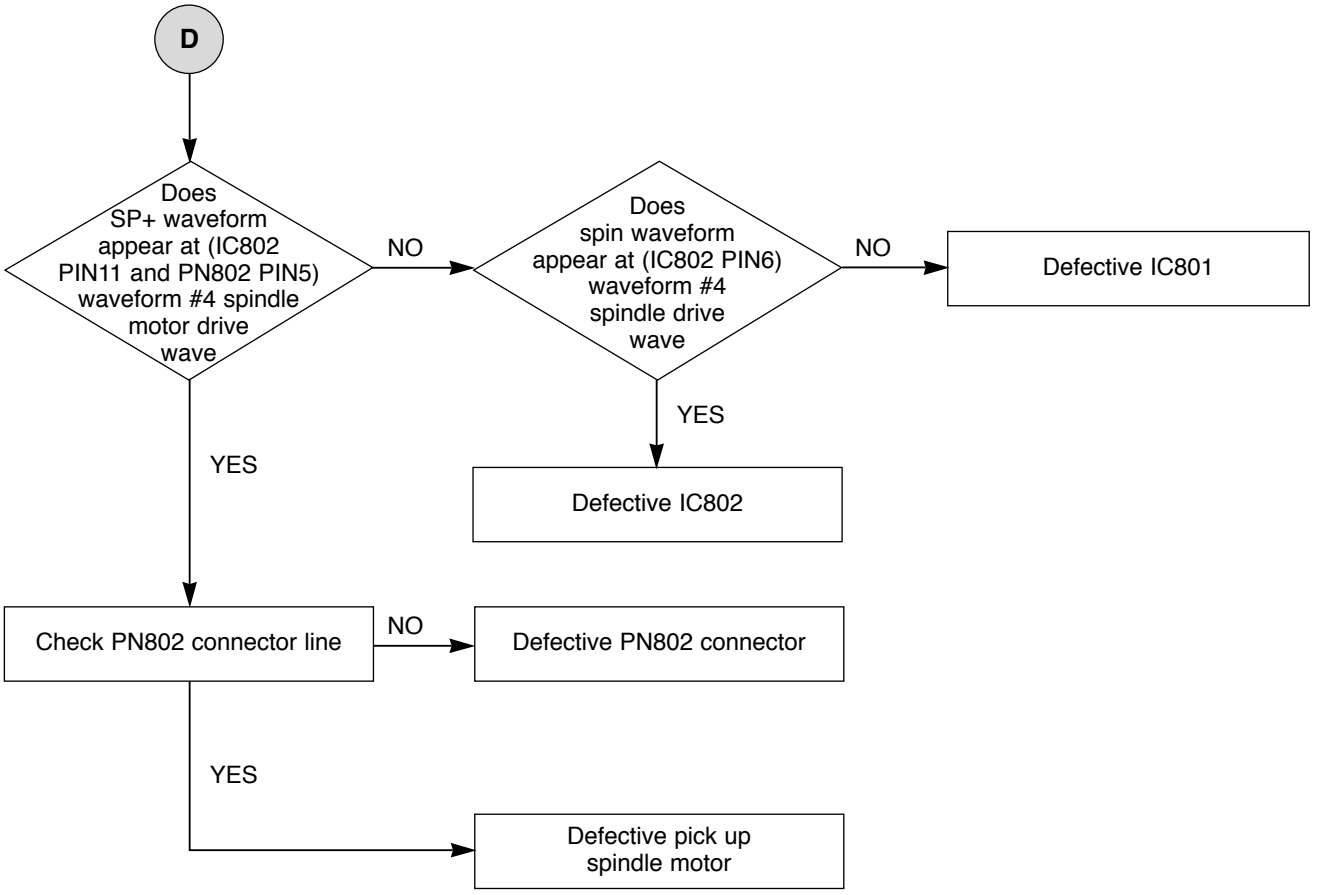
1-5. READING OK CHECK #B (= “NO DISC” DISPLAY)



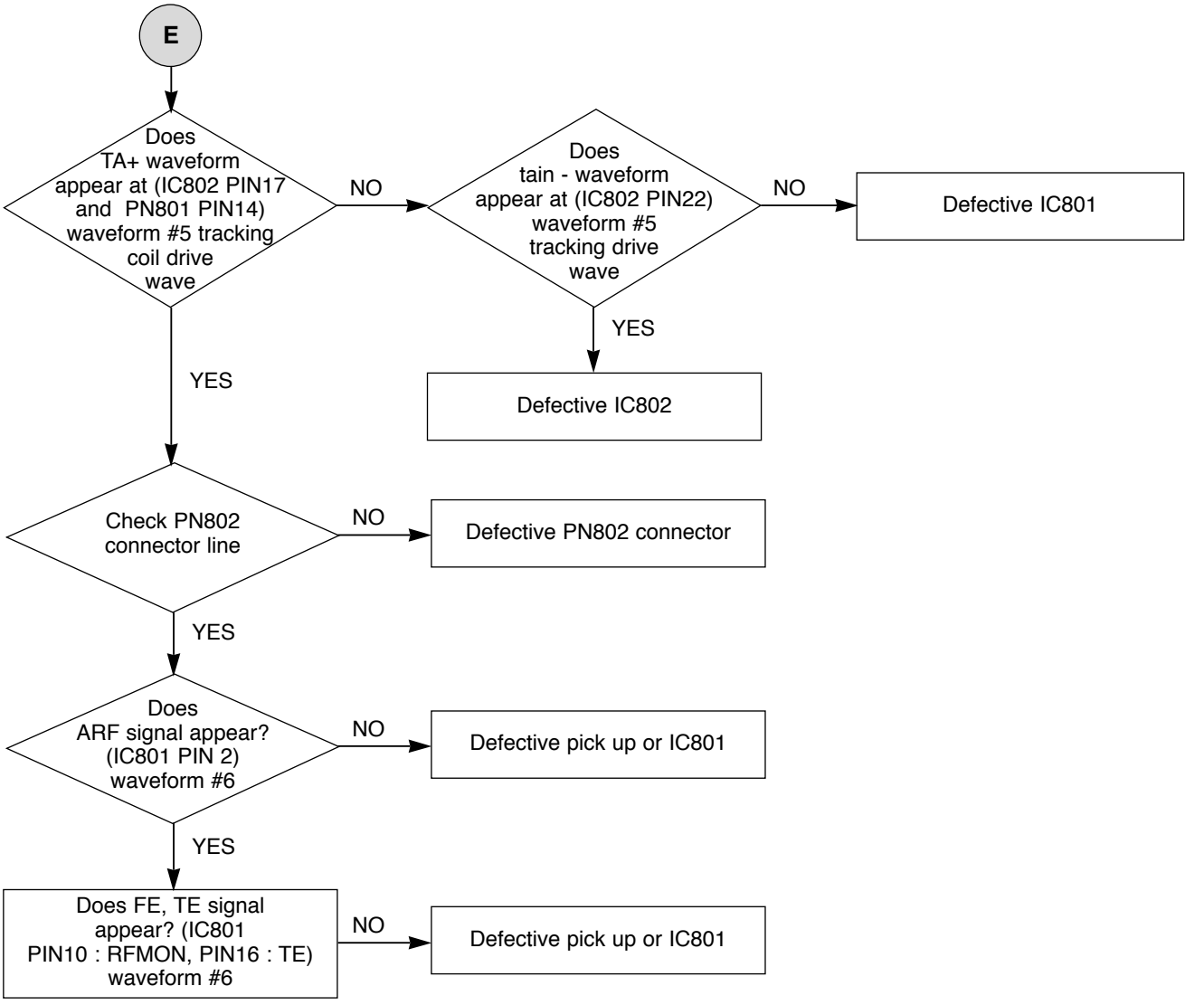
1-6. READING OK CHECK #C (= “NO DISC” DISPLAY)



1-7. READING OK CHECK #D (= “NO DISC” DISPLAY)

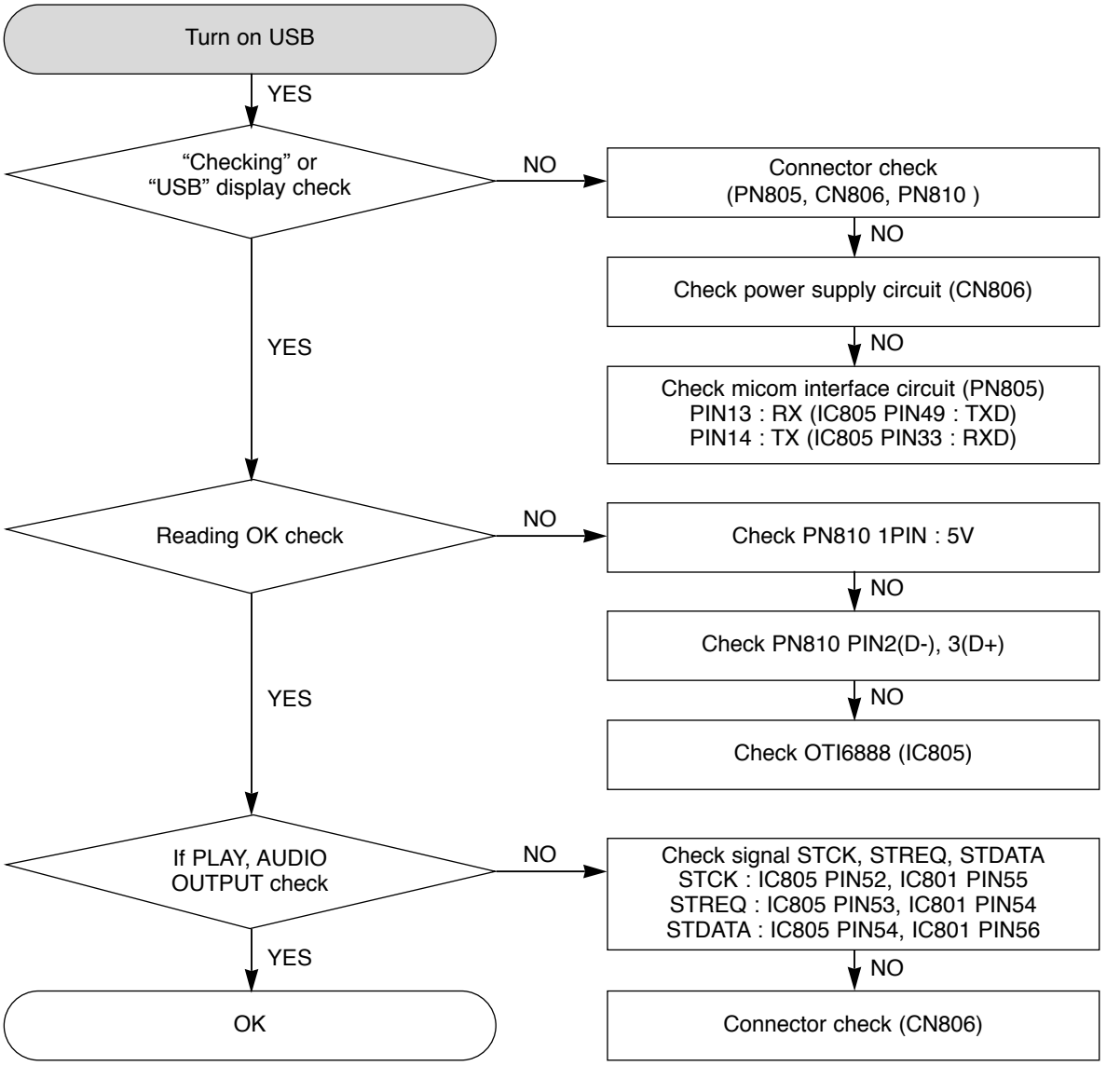


1-8. READING OK CHECK #E (= “NO DISC” DISPLAY)



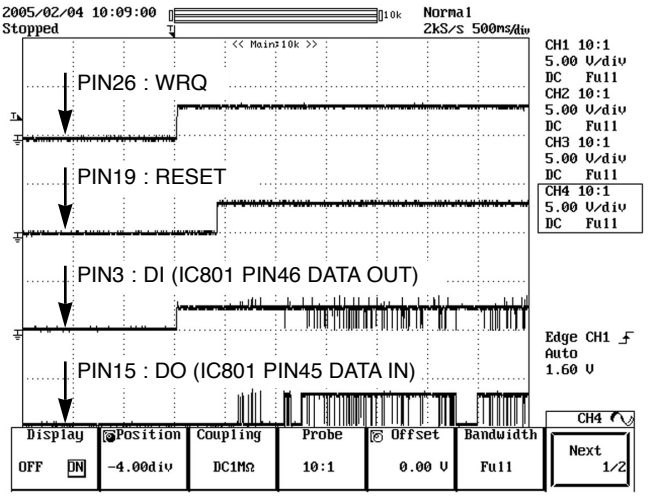
* REMON is FE

2. USB PART TROUBLESHOOTING

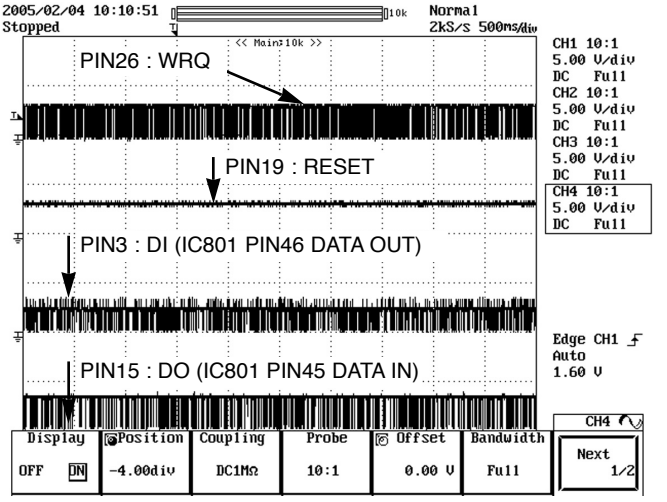


WAVEFORMS OF MAJOR CHECK POINT

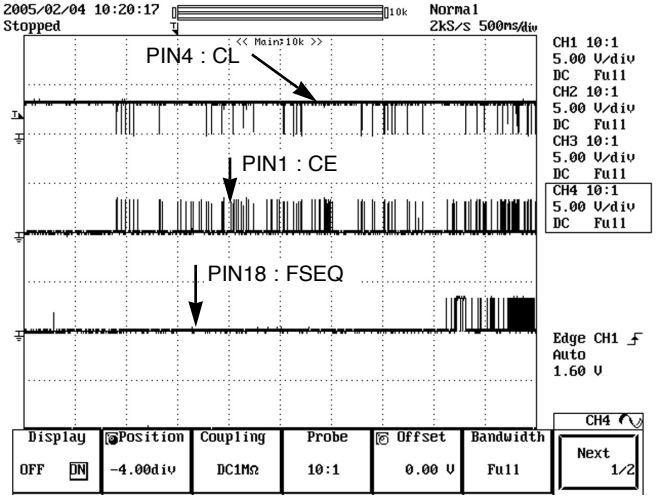
#1.MICOM INTERFACE WAVEFORM
(PN805 PIN26, 19, 3, 15) during power on



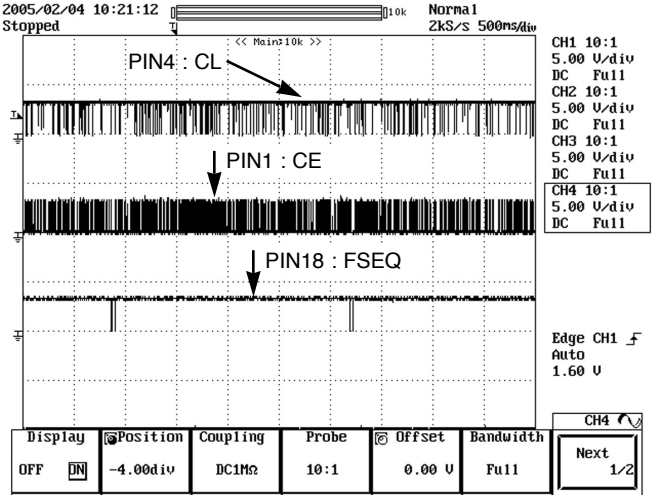
#1.MICOM INTERFACE WAVEFORM
(PN805 PIN26, 19, 3, 15) during normal play



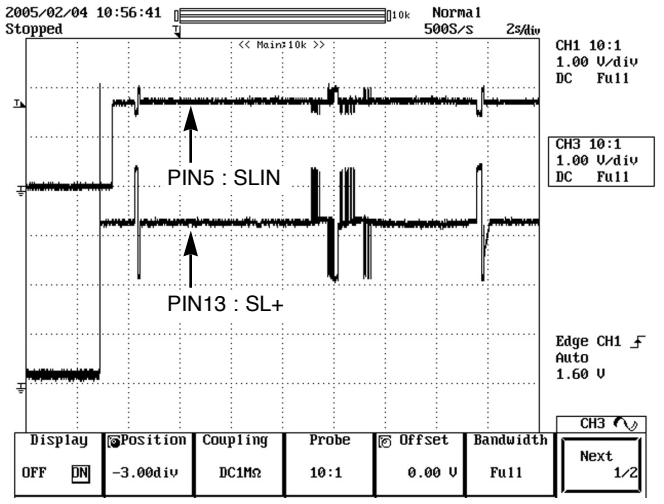
#1.MICOM INTERFACE WAVEFORM
(PN805 PIN4, 1, 18) during power on



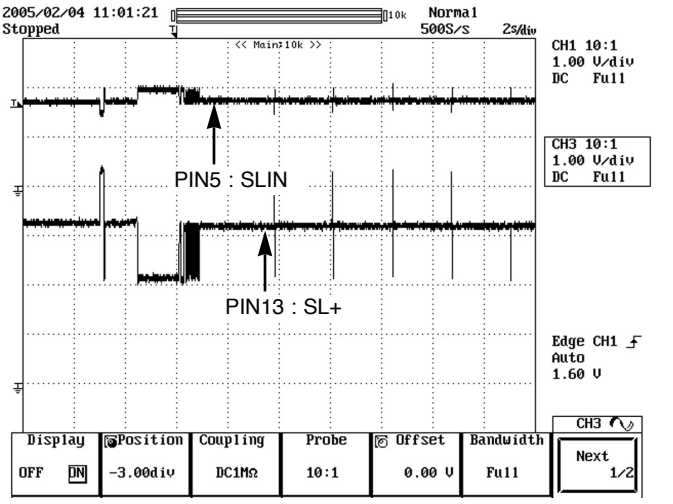
#1.MICOM INTERFACE WAVEFORM
(PN805 PIN4, 1, 18) during normal play



#2.SLED DRIVE AND MOTOR WAVEFORM
(IC802 PIN5, 13) when focus search

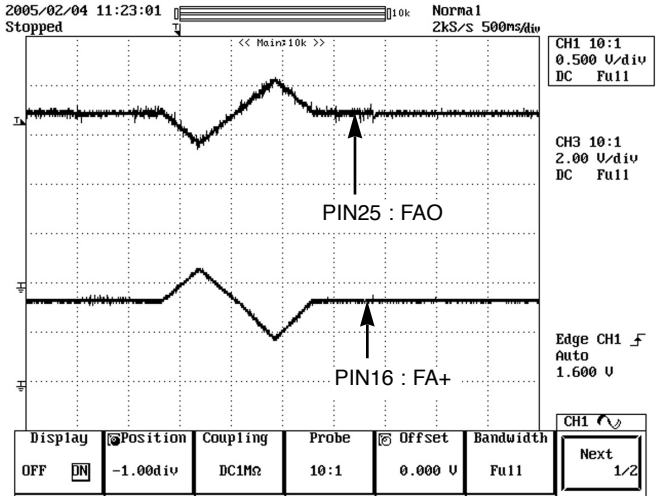


#2.SLED DRIVE AND MOTOR WAVEFORM
(IC802 PIN5, 13) during normal play



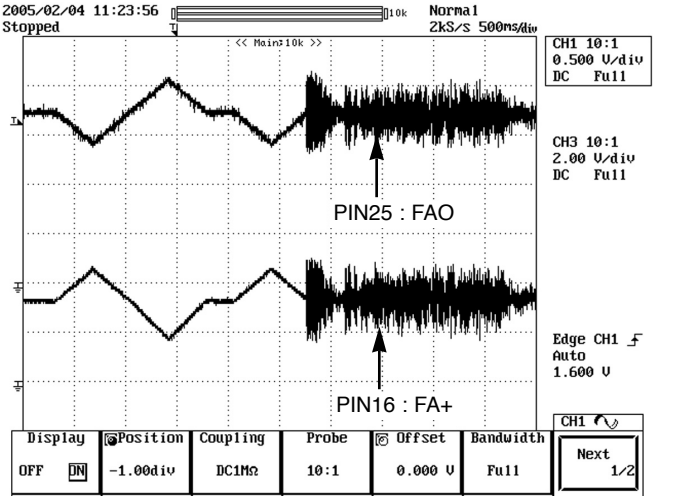
#3.FOCUS DRIVE AND MOTOR WAVEFORM
(IC802 PIN25, IC802 PIN16)

- When focus search failed or there is no disc on tray

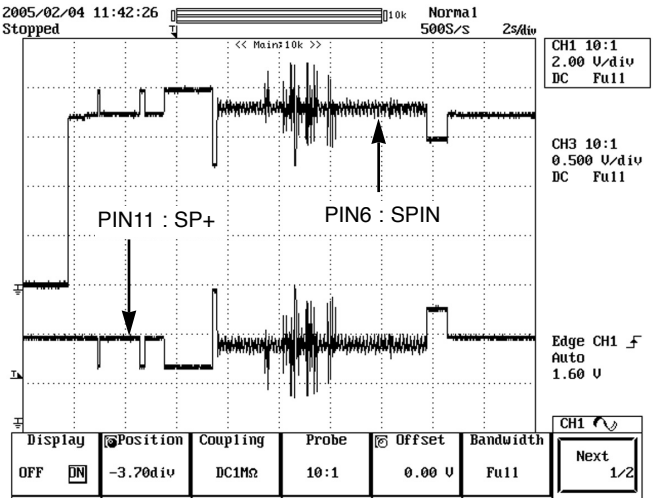


#3.FOCUS DRIVE AND MOTOR WAVEFORM
(IC802 PIN25, IC802 PIN16)

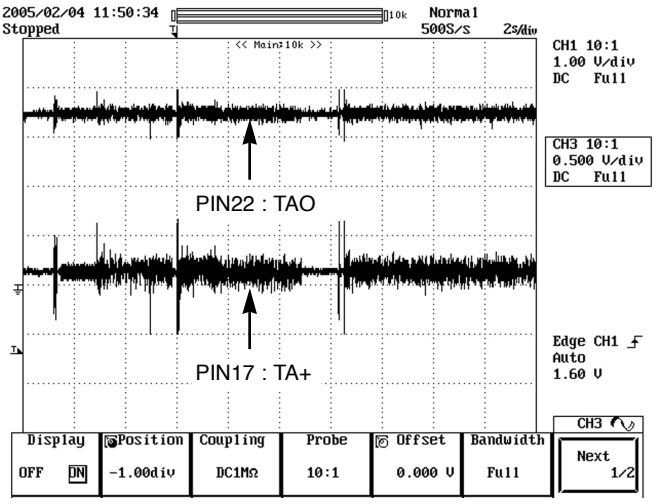
- There is disc on tray and focus search success



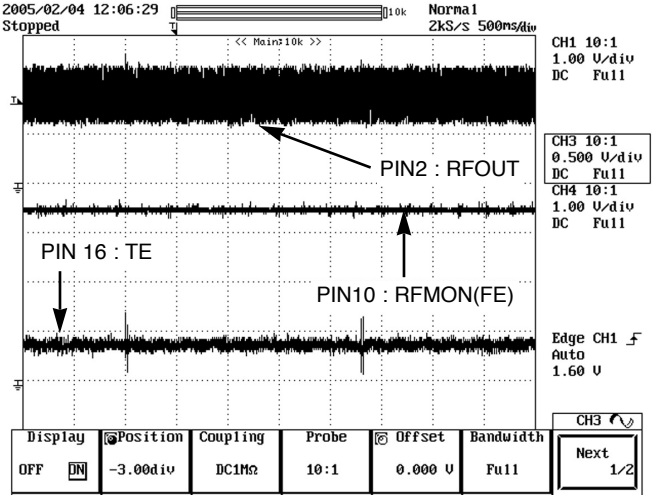
#4.SPINDLE DRIVE AND MOTOR WAVEFORM
(IC802 PIN6, 11) when TOC reading



#5.TRACK DRIVE AND MOTOR WAVEFORM
(IC802 PIN22, IC802 PIN17) during normal play

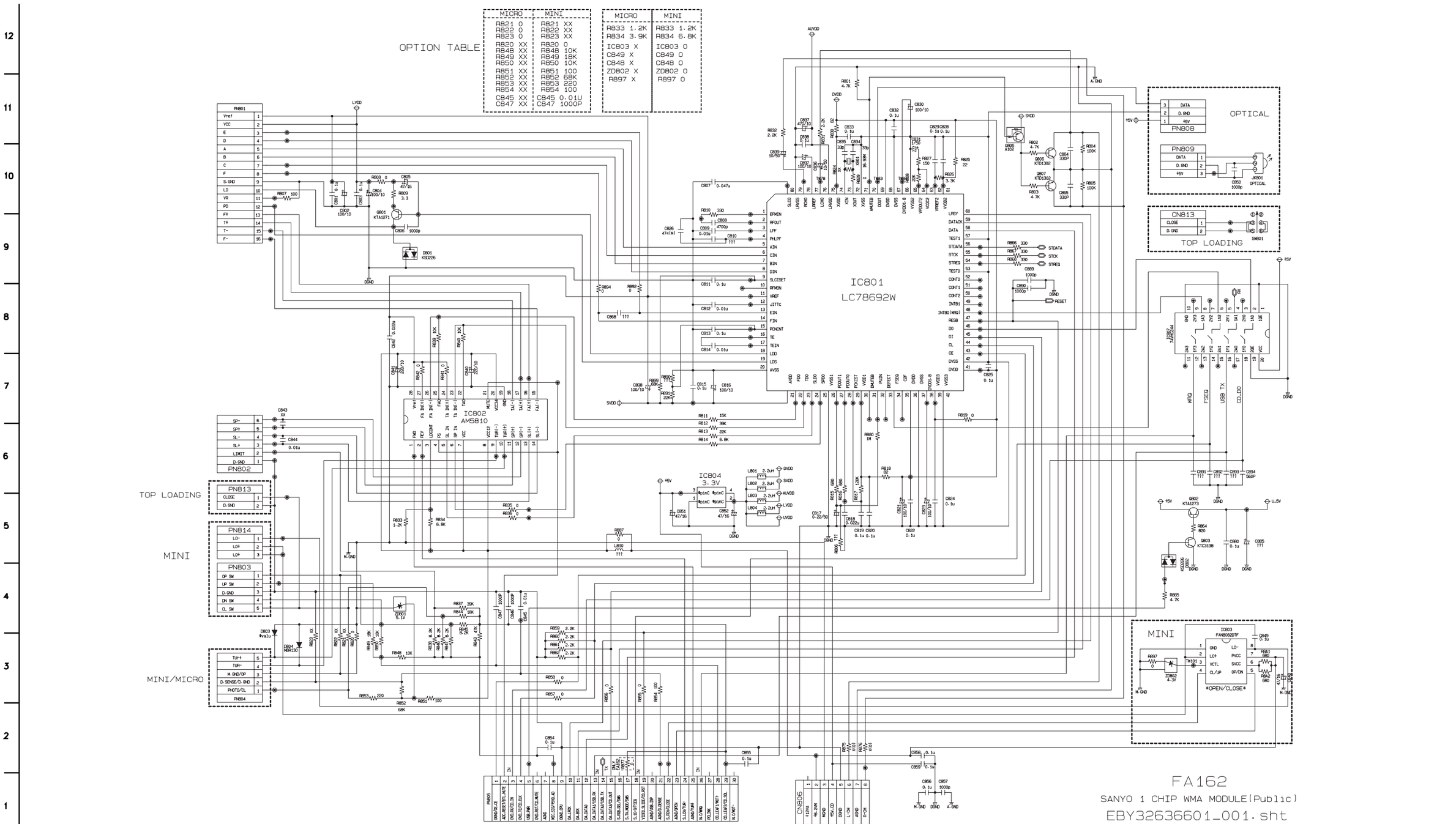


#6.RF, FOCUS AND TRACKING ERROR WAVEFORM
(IC801 PIN2, 10, 16) during normal play

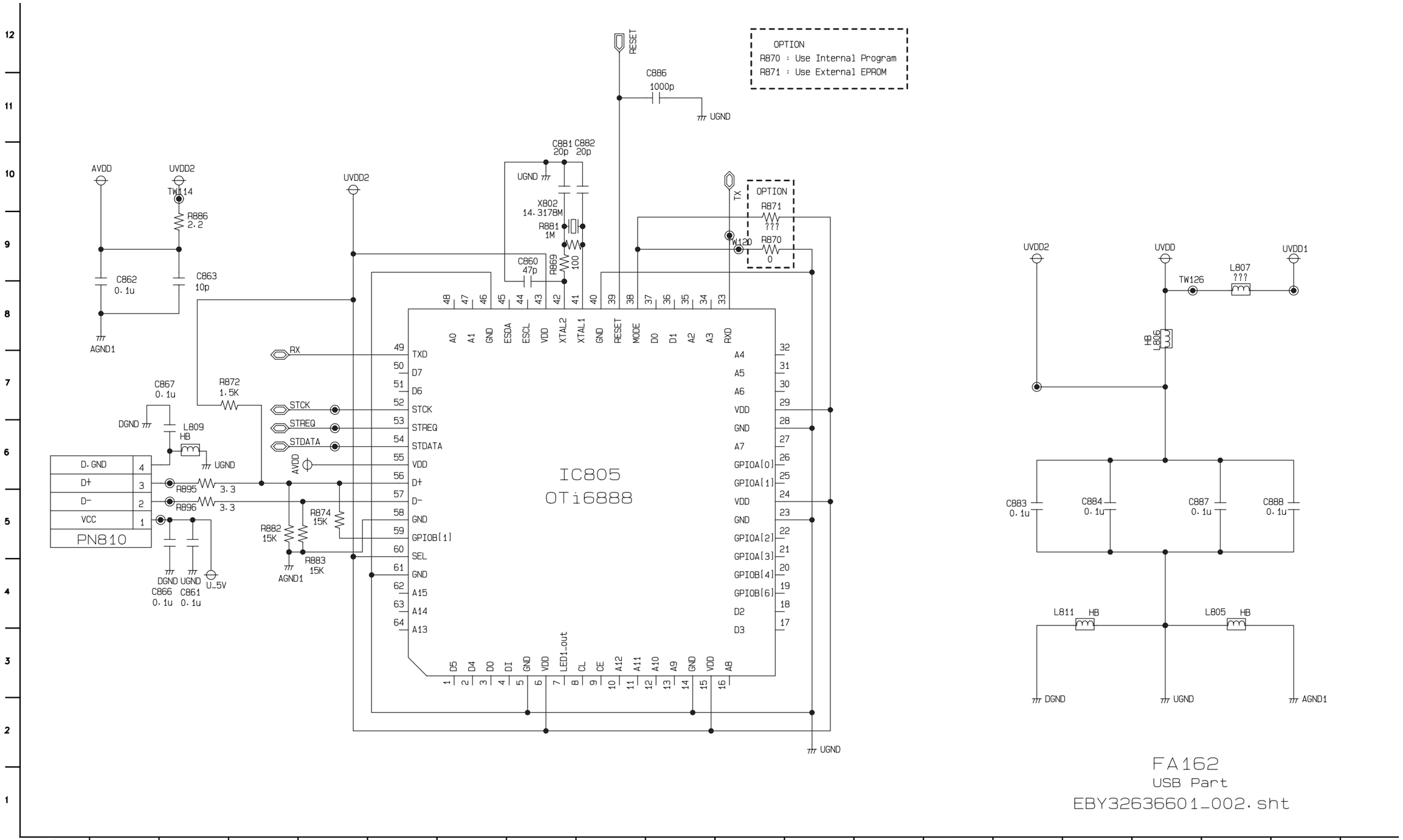


SCHEMATIC DIAGRAMS

1. CD SCHEMATIC DIAGRAM



2. USB SCHEMATIC DIAGRAM

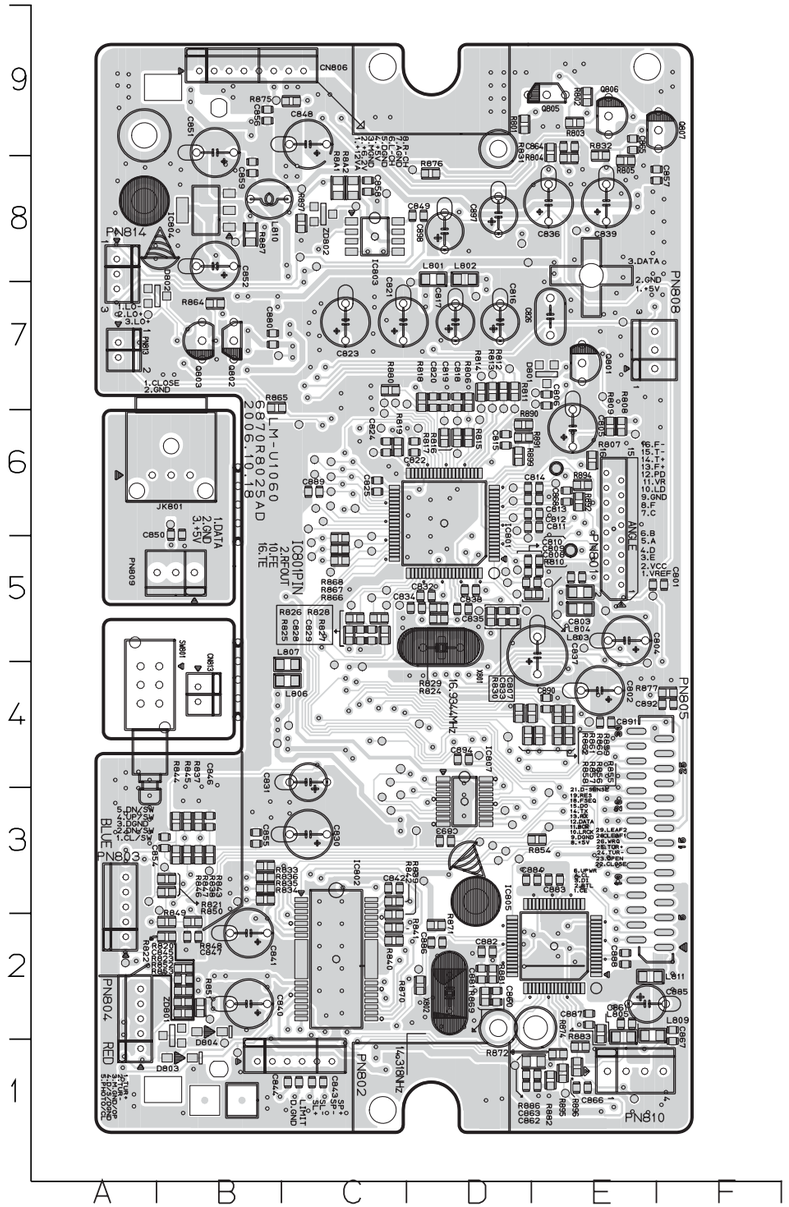


FA162
USB Part
EBY32636601_002.sht

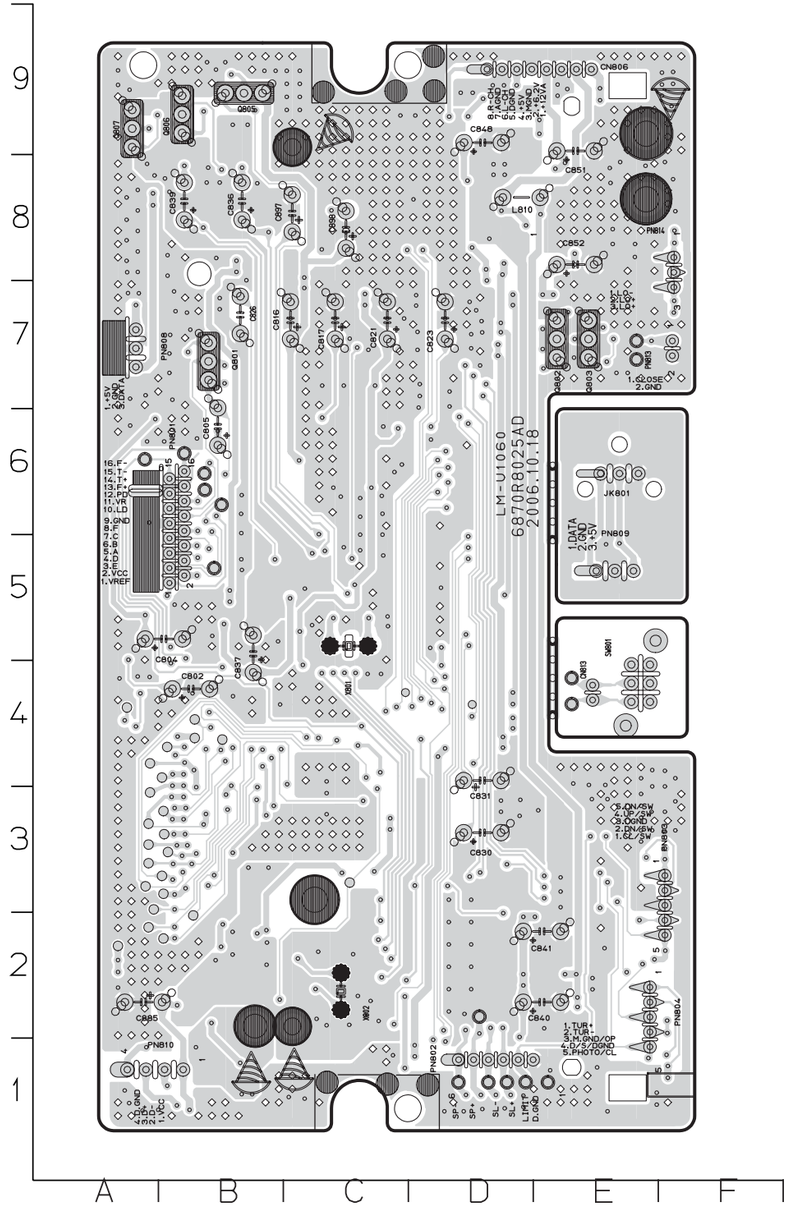
PRINTED CIRCUIT BOARD DIAGRAM

CD P.C.BOARD

(TOP VIEW)



(BOTTOM VIEW)



MEMO

MEMO