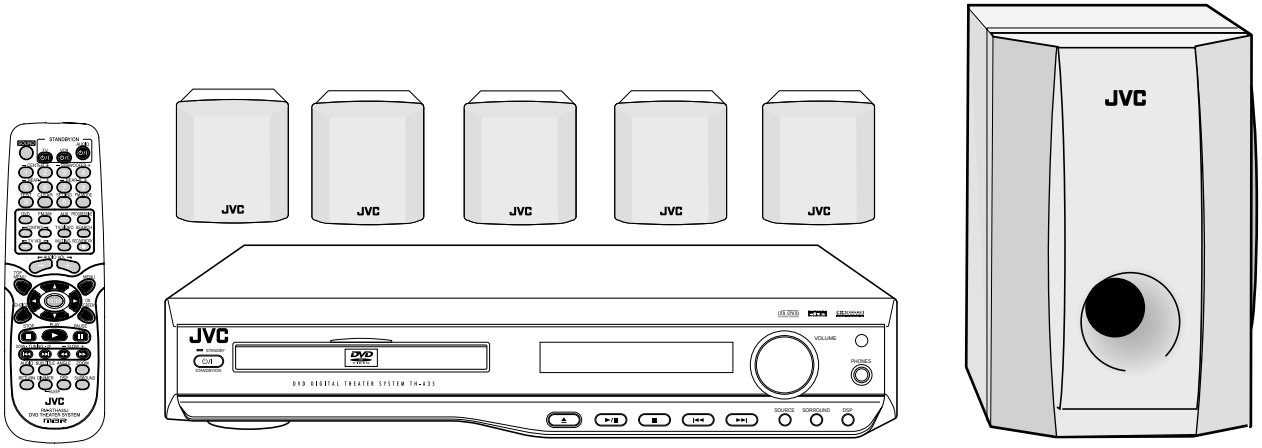
JVC

SERVICE MANUAL

DVD DIGITAL CINEMA SYSTEM

TH-A35



Area Suffix

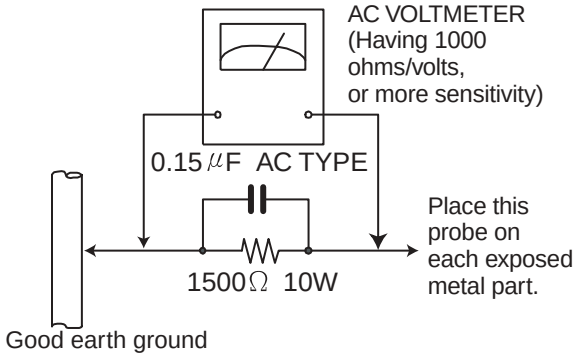
J ..... U.S.A.
C ..... Canada

Contents

No. 22020
Jun. 2003

Safety Precautions

1. This design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacture of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage currnet check (Electrical shock hazard testing)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock. Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.)
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1,500Ω10W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground. Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and meausre the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Voltage measured Any must not exceed 0.75 V AC(r.m.s.). This corresponds to 0.5 mA AC(r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

⚠CAUTION

Burrs formed during molding may be left over on some parts of the chassis. Therefore, pay attention to such burrs in the case of preforming repair of this system.

Preventing static electricity

Electrostatic discharge (ESD), which occurs when static electricity stored in the body, fabric, etc. is discharged, can destroy the laser diode in the traverse unit (optical pickup). Take care to prevent this when performing repairs.

1.1. Grounding to prevent damage by static electricity

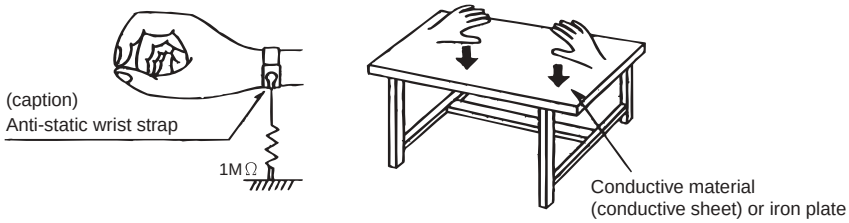
Static electricity in the work area can destroy the optical pickup (laser diode) in devices such as DVD players.
Be careful to use proper grounding in the area where repairs are being performed.

1.1.1. Ground the workbench

1. Ground the workbench by laying conductive material (such as a conductive sheet) or an iron plate over it before placing the traverse unit (optical pickup) on it.

1.1.2. Ground yourself

1. Use an anti-static wrist strap to release any static electricity built up in your body.



1.1.3. Handling the optical pickup

1. In order to maintain quality during transport and before installation, both sides of the laser diode on the replacement optical pickup are shorted. After replacement, return the shorted parts to their original condition. (Refer to the text.)
2. Do not use a tester to check the condition of the laser diode in the optical pickup. The testers internal power source can easily destroy the laser diode.

1.2. Handling the traverse unit (optical pickup)

1. Do not subject the traverse unit (optical pickup) to strong shocks, as it is a sensitive, complex unit.
2. Cut off the shorted part of the flexible cable using nippers, etc. after replacing the optical pickup. For specific details, refer to the replacement procedure in the text. Remove the anti-static pin when replacing the traverse unit. Be careful not to take too long a time when attaching it to the connector.
3. Handle the flexible cable carefully as it may break when subjected to strong force.
4. It is not possible to adjust the semi-fixed resistor that adjusts the laser power. Do not turn it.

Important for laser products

1. **CLASS 1 LASER PRODUCT**
2. **CAUTION :** Visible and invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. **CAUTION :** There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.
4. **CAUTION :** The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.
5. **CAUTION :** If safety switches malfunction, the laser is able to function.
6. **CAUTION :** Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

⚠ ***CAUTION*** **Please use enough caution not to see the beam directly or touch it in case of an adjustment or operation check.**

VARNING : Osynlig laserstrålning är denna del är öppnad och spårren är urkopplad. Betrakta ej strålen.

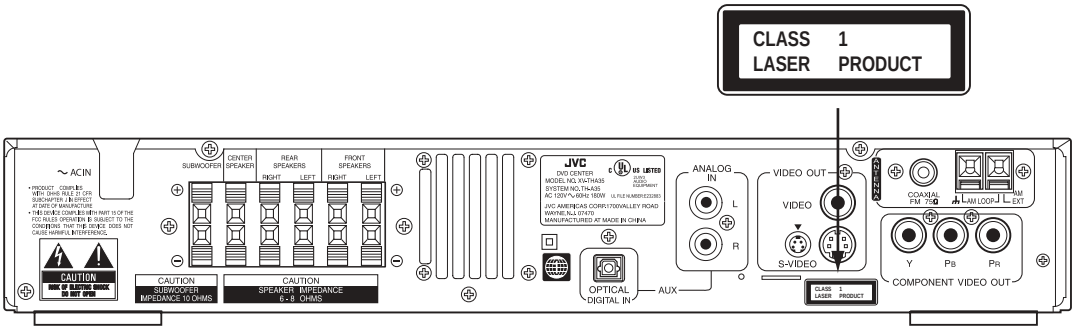
VARO : Avattaessa ja suojalukitus ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen.

ADVARSEL : Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå udsættelse for stråling.

ADVARSEL : Usynlig laserstråling ved åpning, når sikkerhetsbryteren er avslott. Unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

CLASS 1 LABEL



WARNING LABEL

CAUTION : Visible and invisible laser radiation when open and interlock failed or defeated. AVOID DIRECT EXPOSURE TO BEAM. (e)	**ADVARSEL :** Synlig og usynlig laserstråling når maskinen er åben eller interiocken fejler. Undgå direkte eksponering til stråling. (d)
VARNING : Synlig och osynlig laserstrålning när den öppnas och spärren är urkopplad. Betrakta ej strålen. (s)	**VARO :** Avattaessa ja suojalukitus ohitettuna tai viallisena olet alttiina näkyvälle ja näkymättömälle lasersätellylle. Vältä säteen kohdistumista suoraan itseesi. (f)

Disassembly method

Commence disassembly of this set by removing the main units and then proceed to the components and assemblies inside the units.

< MAIN BODY >

■Removing the cabinet top
■Removing the tray Door
■Removing the cabinet front
■Removing the TUNER and panel rear

< CHAS, MAIN ASSEMBLY >

■Removing the MPEG BOARD
■Removing the MAIN BOARD
■Removing FAN
■Removing the Thermal - Regifer
■Removing the VCD mechanism base assembly
■Removing PWB, AMP
■Removing Power , fruformer

2. PIN CONFIGURATION

< Front panel ASSEMBLY >

■Removing the FRONT PWB & LED PWB

< MAIN BODY >

■ Removing the cabinet top (See Fig.1)

1. Unscrew the 6 serew A
2. Lift the cabinet top by holding the two sides of it, while moving it upward and backward.

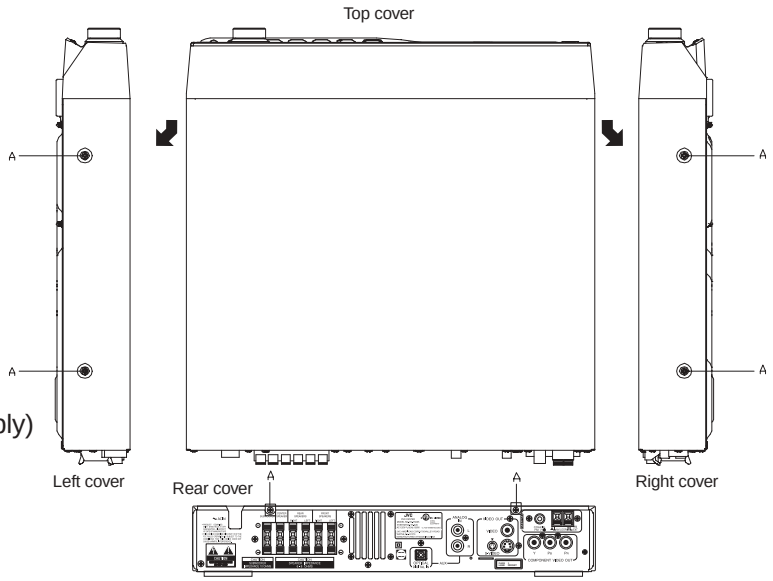


Fig.1

■ Removing the Tray Door (See Fig.2)

1. Eject the disc tray.
   (Rotate the screw B counter - clockwise if no supply)
2. Lift up the tray door in the indicated direction

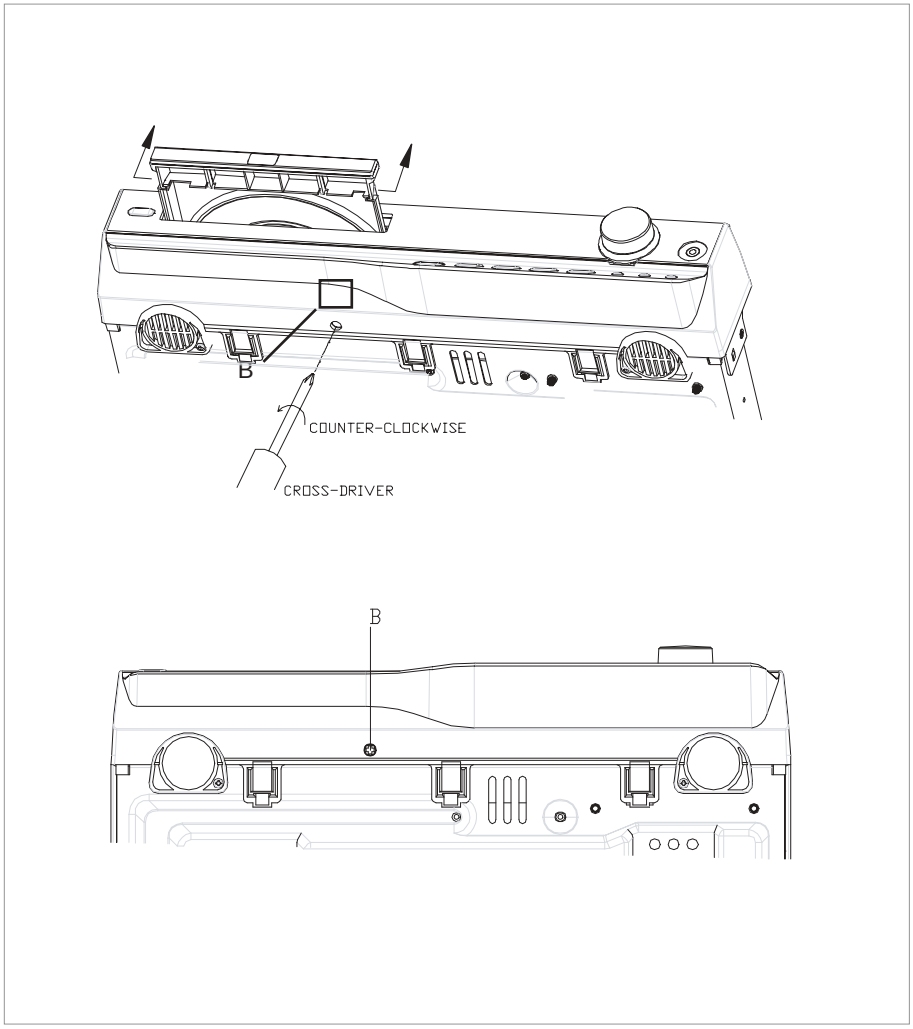


Fig.2

■ Removing the cabinet front (See Fig.3)

[Caution] You must ensure the TRAY door isn't it's place before you remove the panel front from body.

1. Unscrew the serew 2 C & 2 D.
2. Pull the panel front toward yourself while pressing 5 stoppers to disengage.

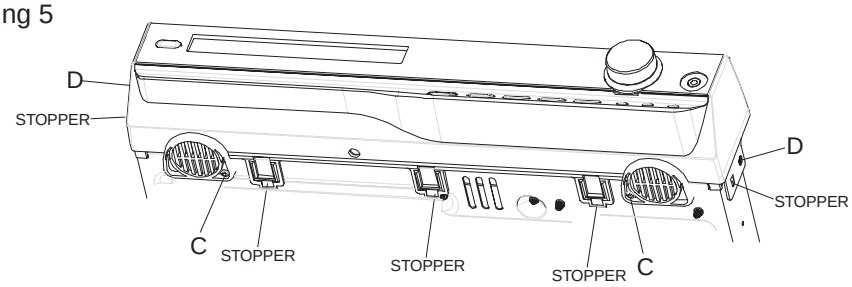


Fig.3

■ Removing the TUNER and panel rear (See Fig.4)

1. Unserew the screw H form mpeg board unit and unit and main board unit.
2. Unserw the screw K form body.
3. Take the supply cord out of panel rear.
4. Remove teh panel rear with tuner .

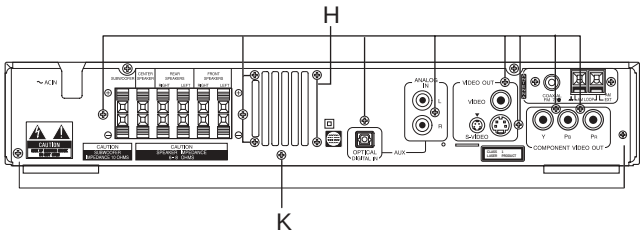


Fig.4

< CHAS, MAIN ASSEMBLY >

■ Removing the MPEG BOARD (See Fig.5)

[Caution] Mpeg board may be taken out only when the panel rear and Tunet have been taken away.

1. Pull the cable connetor mpeg board.
2. Unscrew the screw M.
3. Separate the mpeg board from main board vertically.

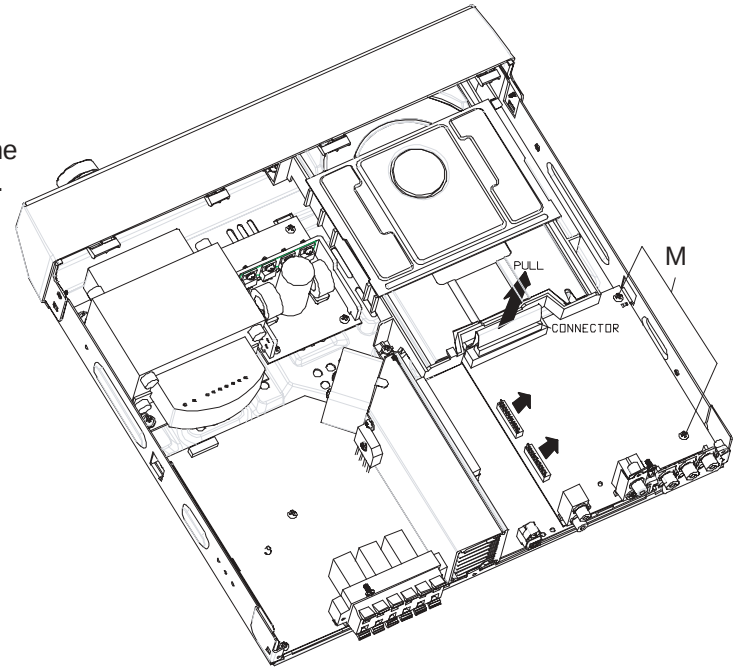


Fig.5

■ Removing the MAIN Board (See Fig.6 & 7)

[Caution] Main board may be taken out when the mpeg board has been taken away.

1. Force the PCB spacer Q to exit the holes of main board.

2. Unscrew the screw P.

3.Unscrew the screw R then you can remove the main board with heat sink.

4.Untie or open connecters to power transformer, PWB,AMP, DVD - mech.

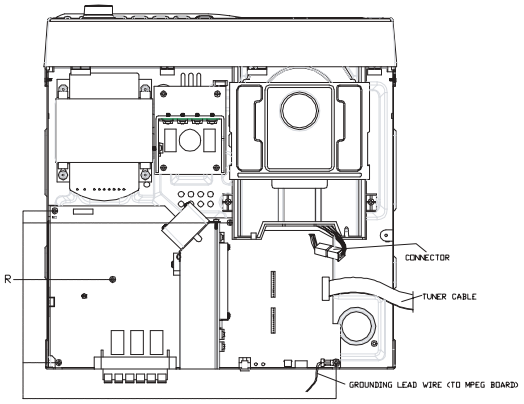


Fig. 7

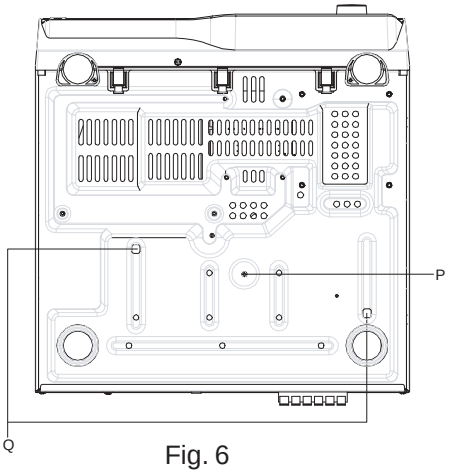


Fig. 6

■ Removing FAN (See Fig.8)

1.Unscreew 3 screws R with HOLDER, pull out connector from PWB, main.

2.Unscrew 2 screws S from HLDR.

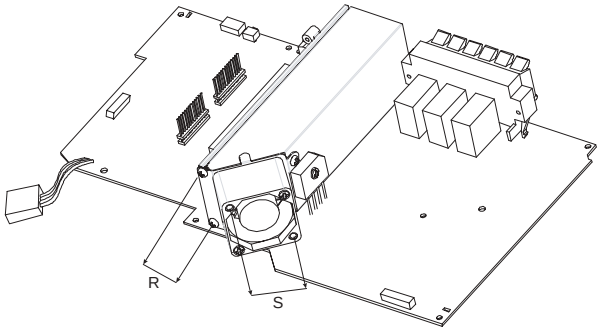


Fig. 8

■ Removing the Thermal - Regifer (See Fig.9)

1.Unscreew the screws though power IC and thermal- HOLDER.

2.Pull wire of thermal - register from PWB main.

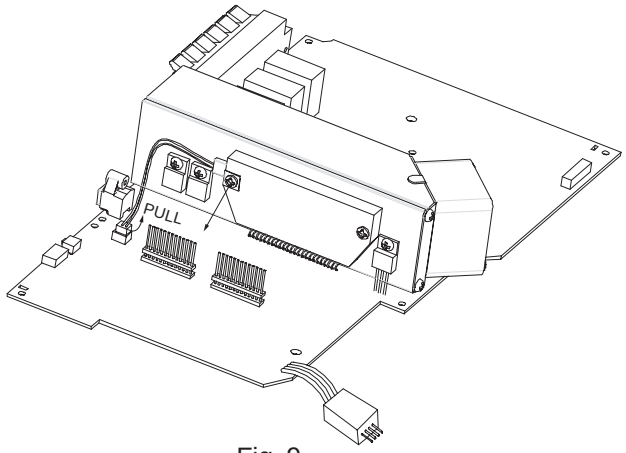


Fig. 9

■ Removing the CD mechanism base assembly

(See Fig.10)

- Prior to performing the following procedure, remove the cabinet front assembly.

1. Disconnect the harnesses from connector CN191 and CN192 on the main board and release them from the cord stopper respectively.

2. Remove the four screws M attaching the transformer assembly.

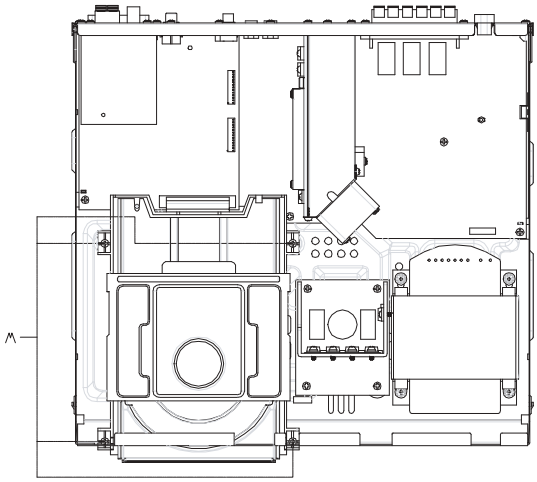


Fig. 10

■ Removing PWB,AMP

(See Fig.11)

1. Unscrew 4 screws L.

2. Pull out connecter from PWB, AMP.

■ Removing Power, frusformer

(See Fig.11)

1. Unscrew 4 screws N

2. Untie wire connecter to PWB, MAIN.

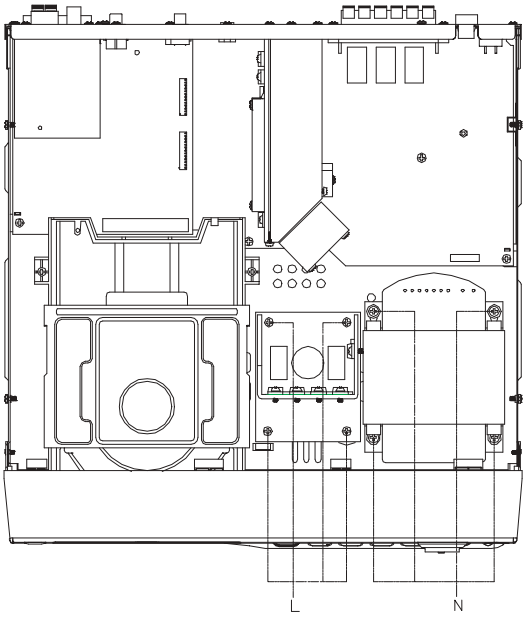


Fig. 11

<Front panel assembly>

■ Removing the front PWB & Led, PWB (See Fig.12-13)

- Prior to performing the following procedure, remove the front panel assembly.

1. Remove the seven screws X and 3 screws attaching the front panel board inside the front panel assembly.

2. Push out KNOB, VOLUME through PWB, FR.

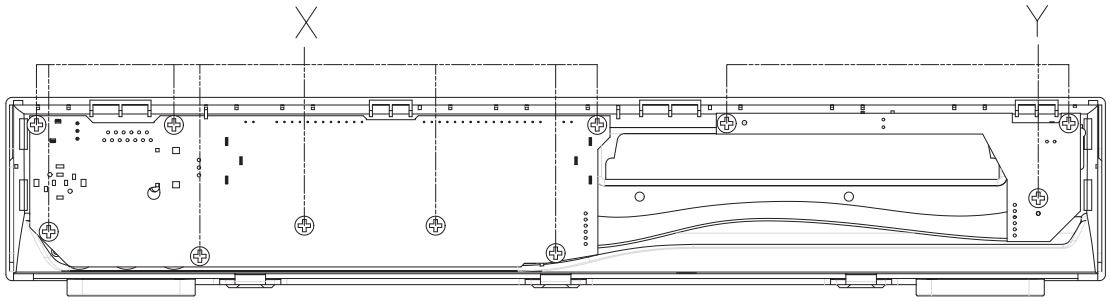


Fig. 12

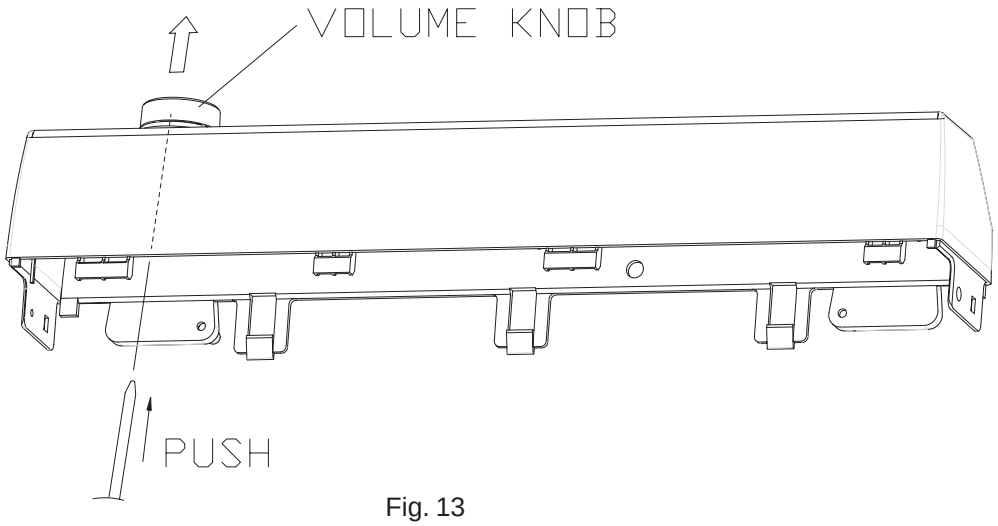
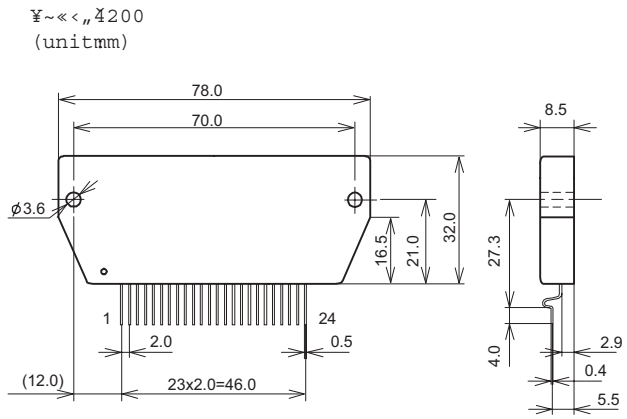


Fig. 13

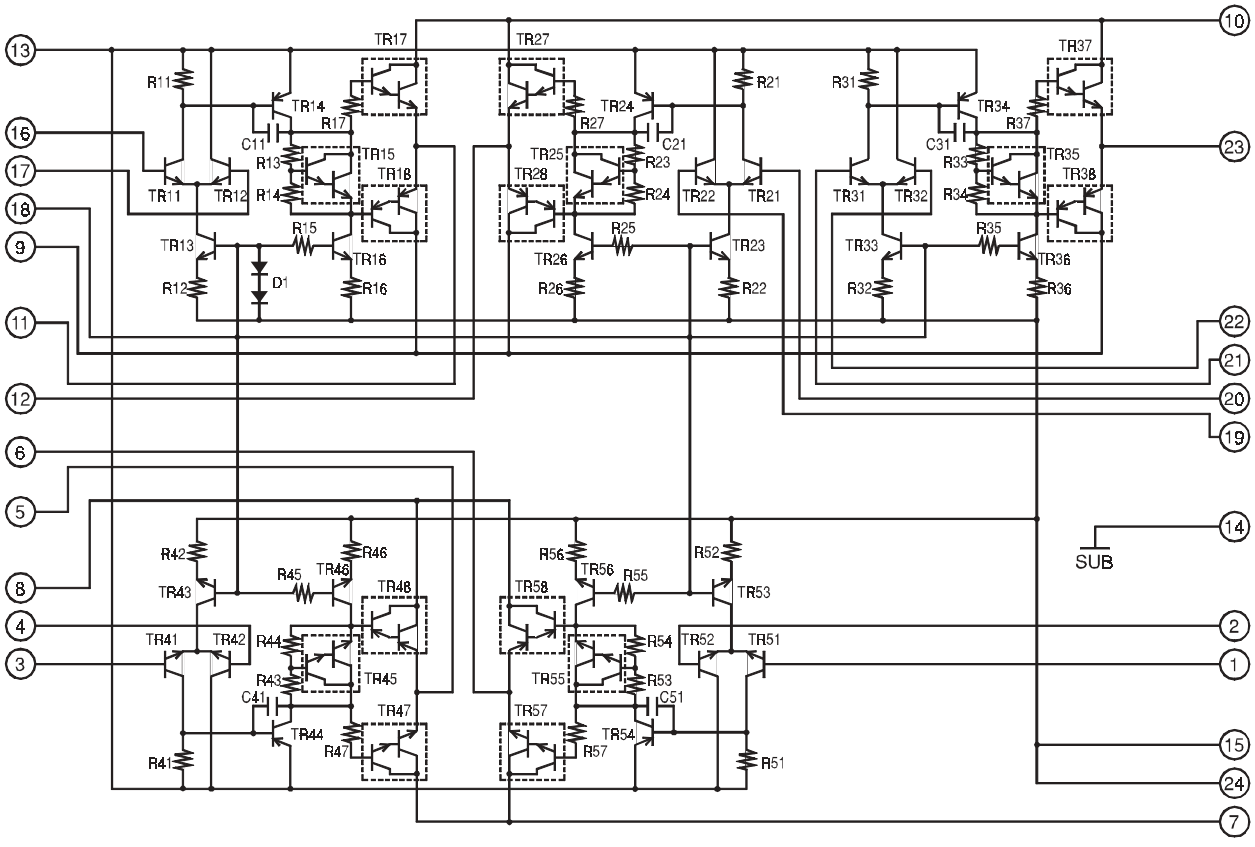
Description of major ICs

■ STK402-950 (U701) : 5 channels AF power amplifier.

1. Pin layput



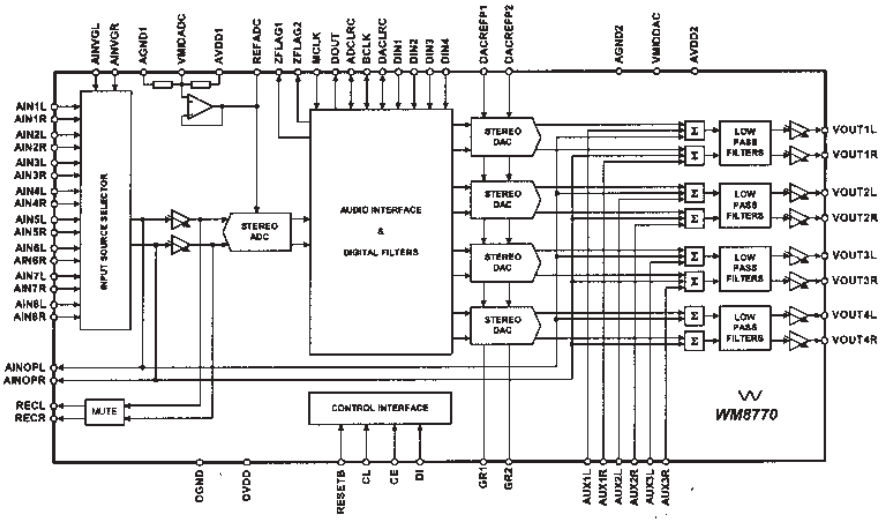
2. Block diagram



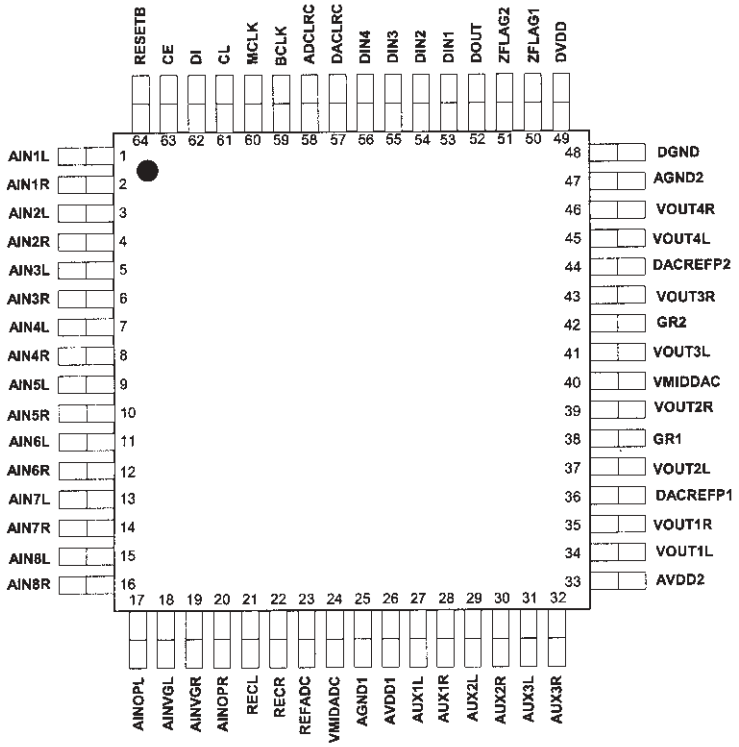
■ WM8770 (U1) : 8-channel code c & volume control

- Surround Sound AV Processors and Hi-Fi systems
- Automotive Audio

1. BLOCK DIAGRAM

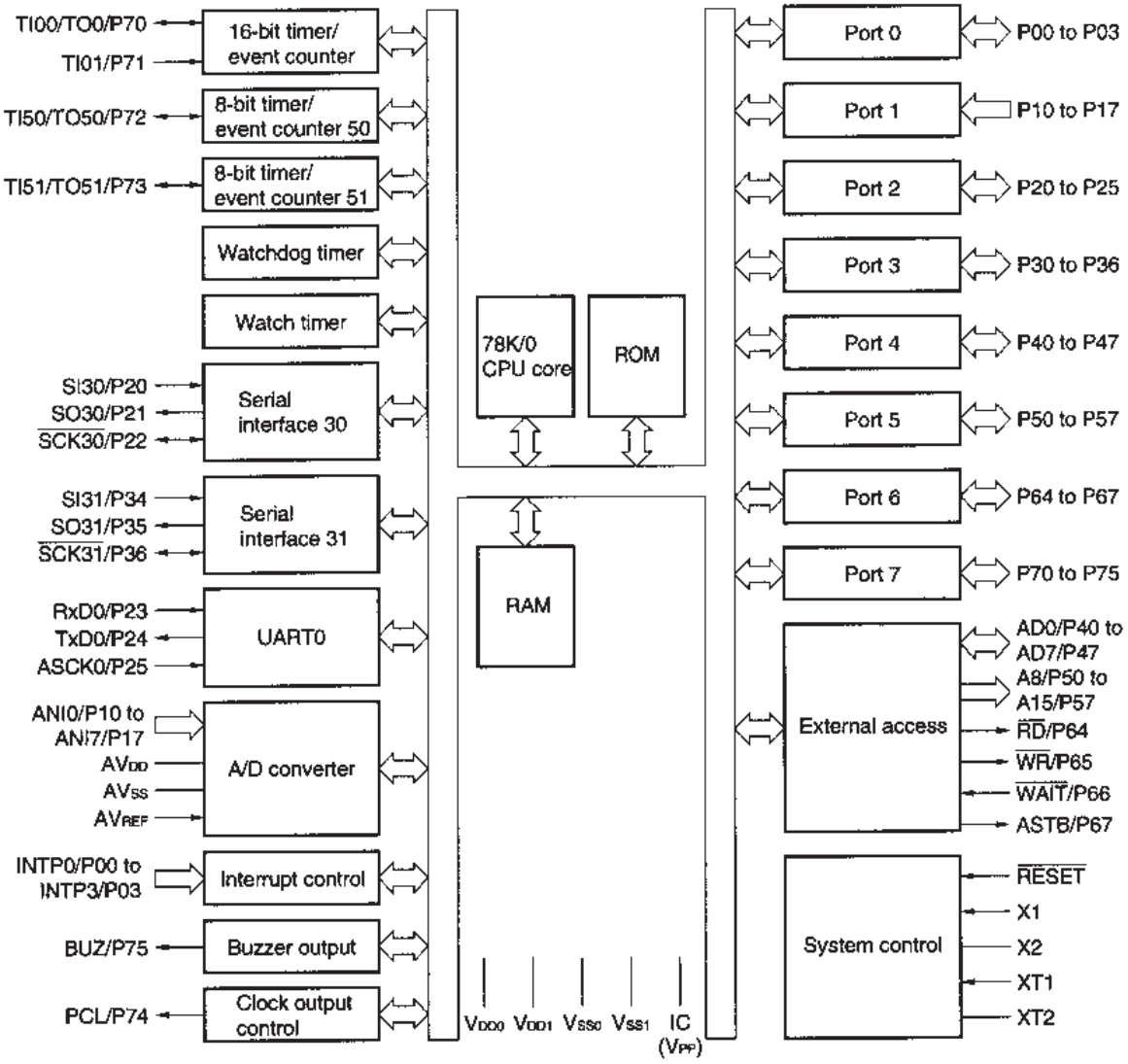


2. PIN CONFIGURATION



■ UPD78F0034A (IC 401) : CPU

1.Block Diagram



2.Outline of Function

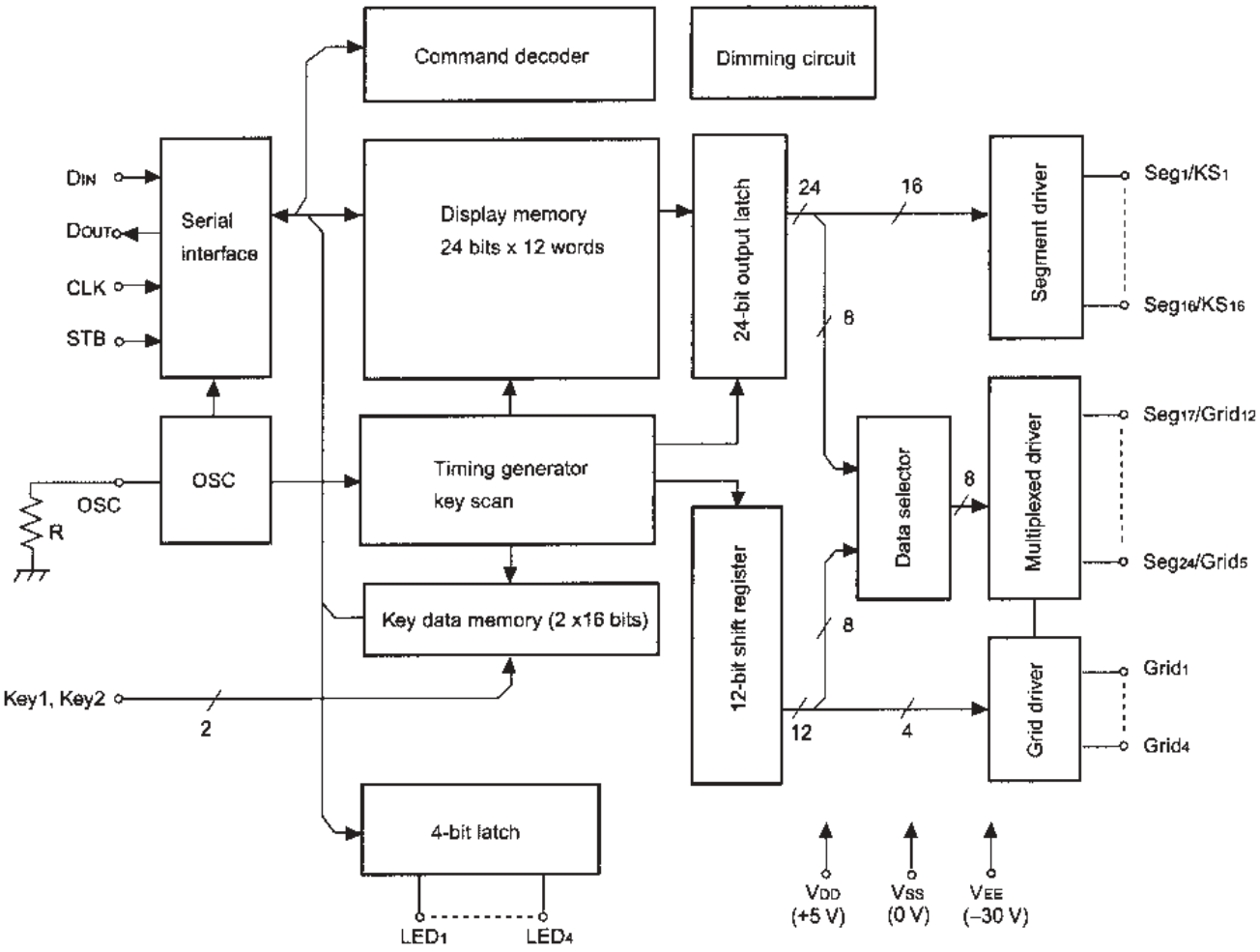
Item \ Part Number		μPD780021A μPD780031A	μPD780022A μPD780032A	μPD780023A μPD780033A	μPD780024A μPD780034A	μPD78F0034A
Internal memory	ROM	8 KB (Mask ROM)	16 KB (Mask ROM)	24 KB (Mask ROM)	32 KB (Mask ROM)	32 KB[Note] (Flash memory)
	High-speed RAM	512 bytes		1024 bytes		1024 bytes[Note]
Memory space		64 KB				
General-purpose register		8 bits × 32 registers (8 bits × 8 registers × 4 banks)				
Minimum instruction execution time		Minimum instruction execution time changeable function				
	When main system clock selected	0.24 μs/0.48 μs/0.95 μs/1.91 μs/3.81 μs (@ 8.38 MHz operation)				
	When subsystem clock selected	122 μs (@ 32.768 kHz operation)				
Instruction set		• 16-bit operation • Multiply/divide (8 bits × 8 bits, 16 bits ÷ 8 bits) • Bit manipulate (set, reset, test, and Boolean operation) • BCD adjust, etc.				
I/O port		Total: 51 • CMOS input: 8 • CMOS I/O: 39 • N-ch open-drain I/O (5 V breakdown): 4				
A/D converter		• 8-bit resolution × 8 channels (μPD780021A, 780022A, 780023A, 780024A) • 10-bit resolution × 8 channels (μPD780031A, 780032A, 780033A, 780034A, 78F0034A) • Low-voltage operation: AV_{DD} = 1.8 to 5.5 V				
Serial interface		• 3-wire serial I/O mode: 2 channels • UART mode: 1 channel				
Timer		• 16-bit timer/event counter: 1 channel • 8-bit timer/event counter: 2 channels • Watch timer: 1 channel • Watchdog timer: 1 channel				
Timer output		Three outputs (8-bit PWM output enable: 2)				
Clock output		• 65.5 kHz, 131 kHz, 262 kHz, 524 kHz, 1.05 MHz, 2.10 MHz, 4.19 MHz, 8.38 MHz (8.38 MHz with main system clock) • 32.768 kHz (32.768 kHz with subsystem clock)				
Buzzer output		1.02 kHz, 2.05 kHz, 4.10 kHz, 8.19 kHz (8.38 MHz with main system clock)				
Vectored interrupt source	Maskable	Internal: 13, External: 5				
	Non-maskable	Internal: 1				
	Software	1				
Power supply voltage		V_{DD} = 1.8 to 5.5 V				
Operating ambient temperature		T_A = −40 to +85°C				
Package		• 64-pin plastic SDIP (19.05 mm (750)) • 64-pin plastic QFP (14 × 14) • 64-pin plastic TQFP (12 × 12) • 64-pin plastic LQFP (10 × 10)				

★

Description of major ICs

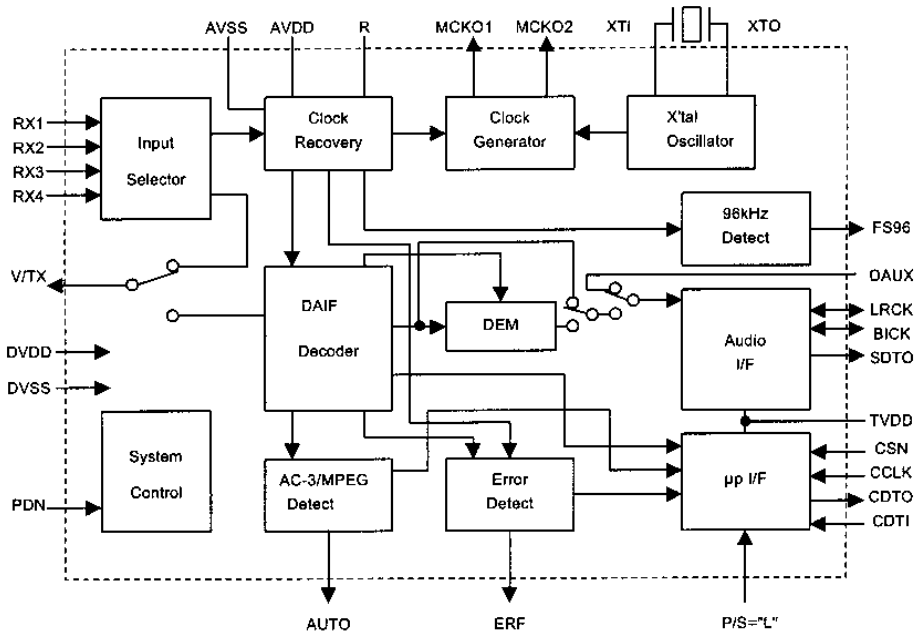
UPD 16315 (IC904): VFD control ler / driver

1. BLOCK DIAGRAM

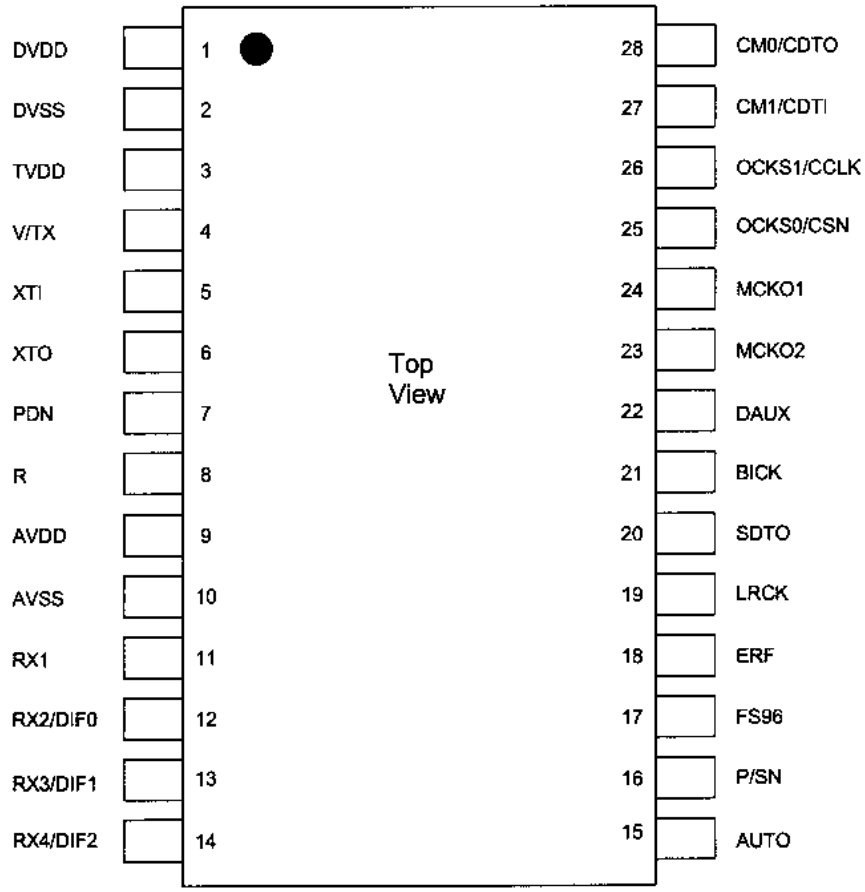


■ AK4112 (U17) : Digital audio receiver

1. BLOCK DIAGRAM

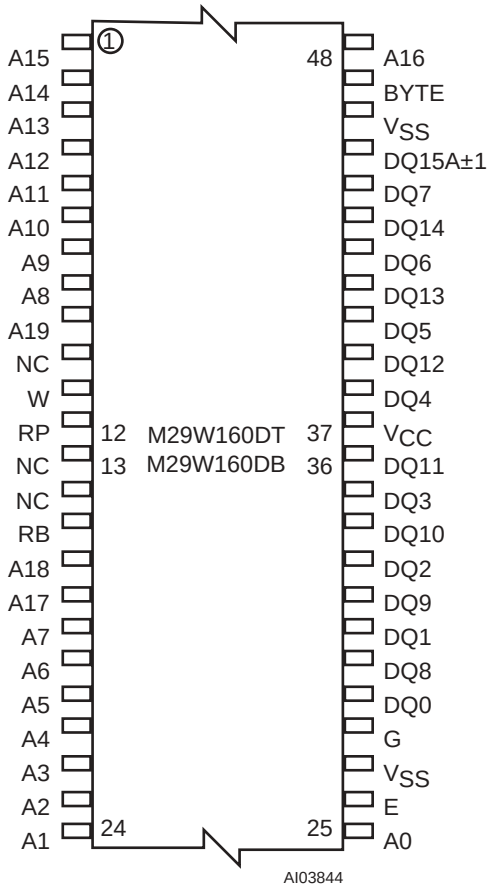


2. Pin Layout (AK4112BVF)

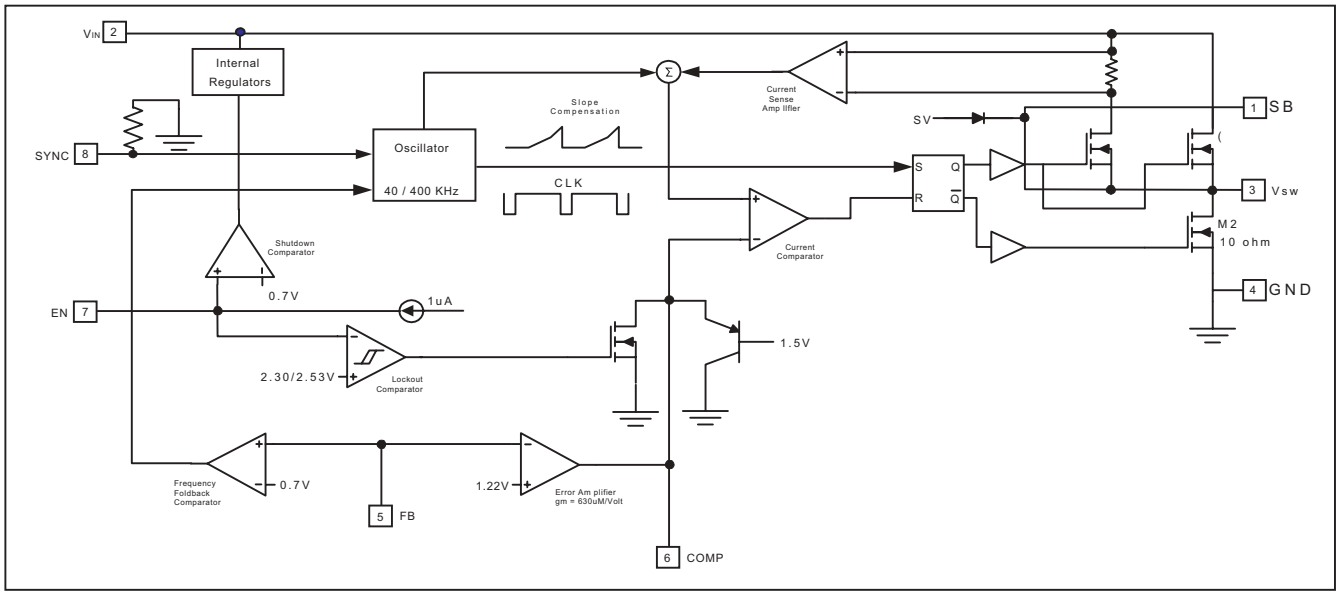


■ M29W160DB (U12) : 16M Flash memory

.Pim layout

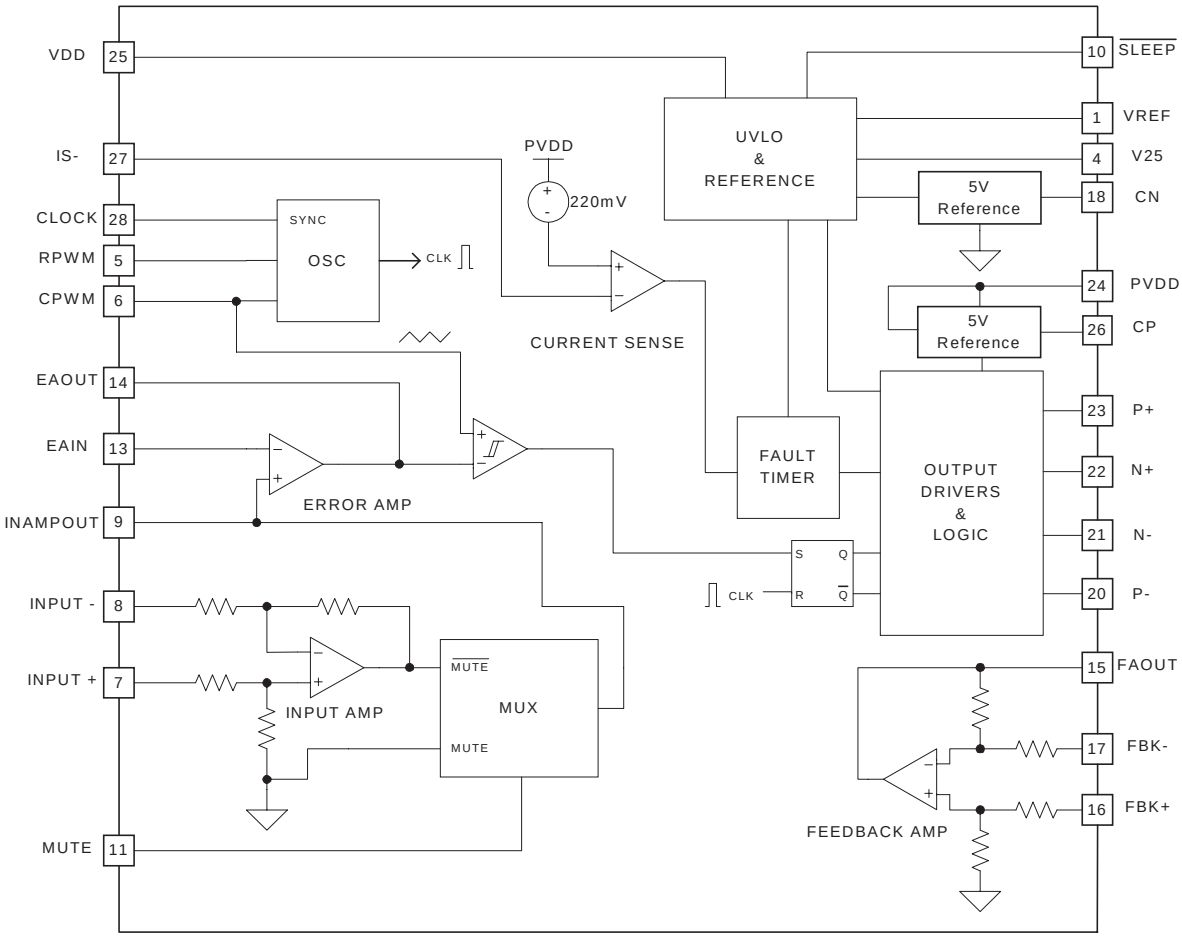


■ 2a3020 (IC 701): DC - DC Regulator



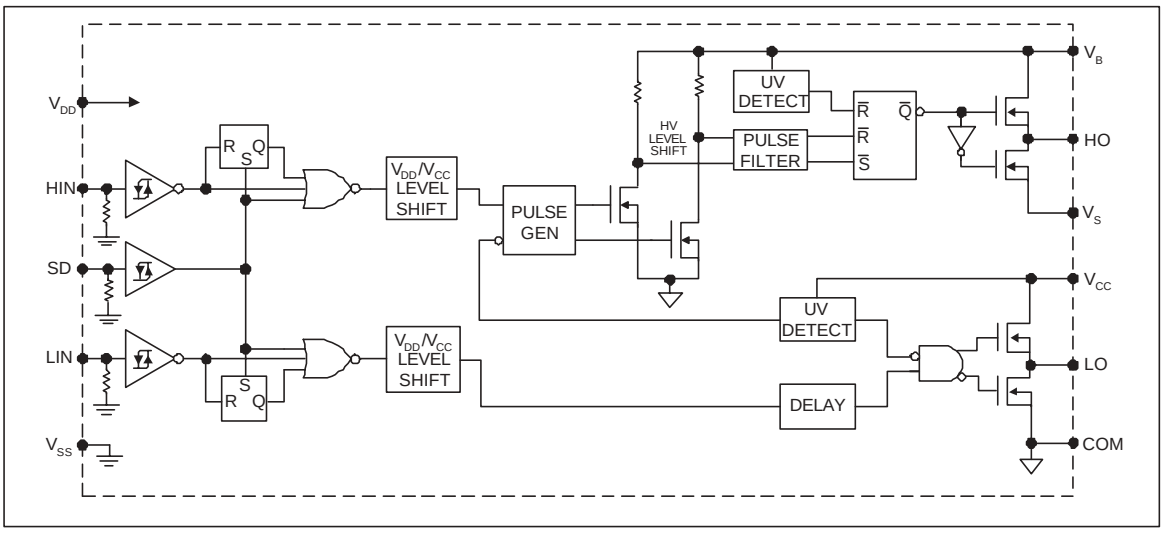
■ LX171/LX1711 (IC603) :

Class-D mono power amplifier controller



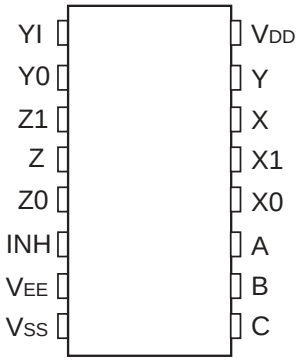
■ IR2110 (IC603,604): Low and nigh side driver

Functional Block Diagram

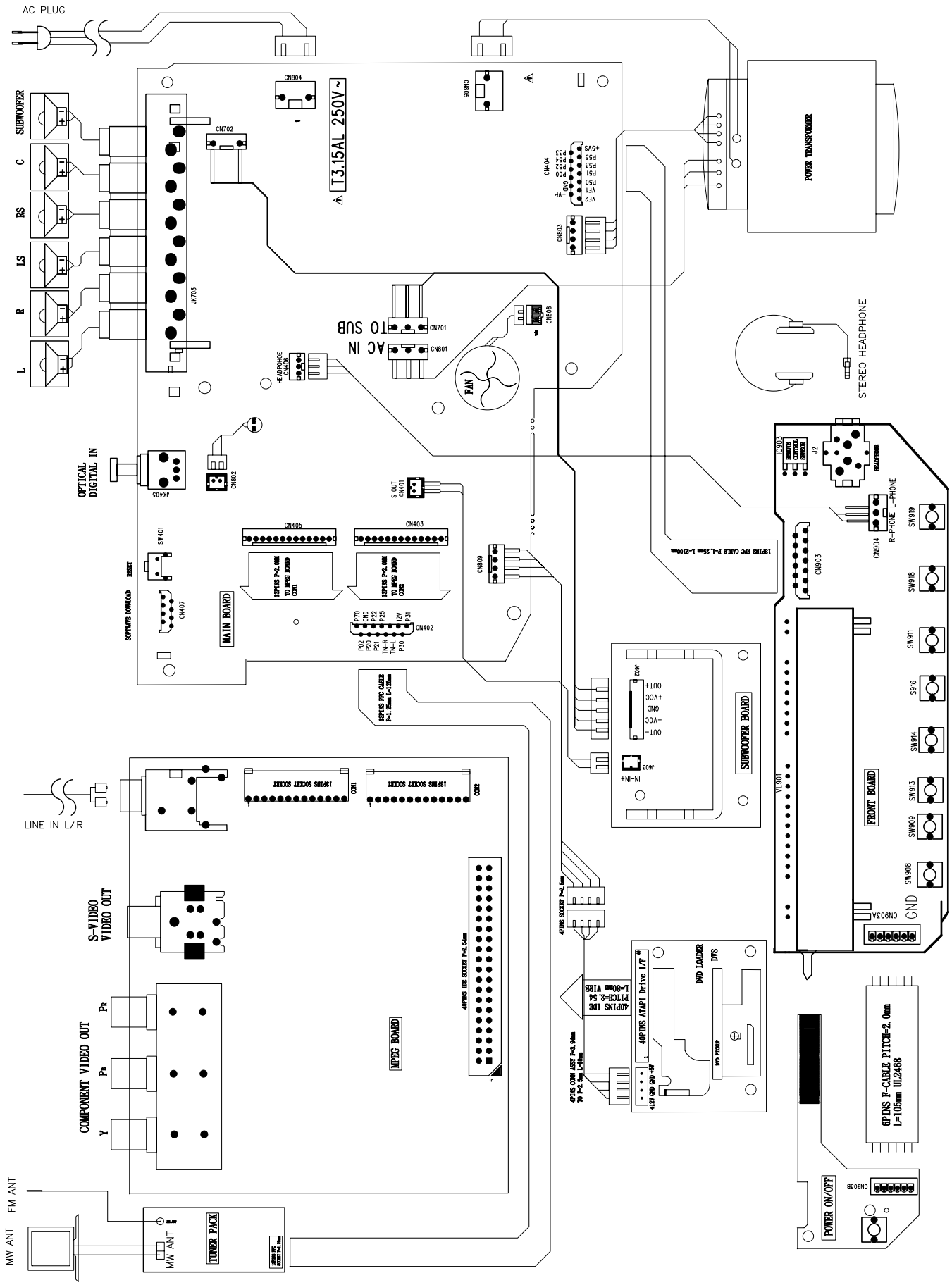


■ MC 14053B (U21): digitally - controlled analog swith

Pin layout



Wiring connection



< MEMO >

JVC

VICTOR COMPANY OF JAPAN, LIMITED
AV & MULTIMEDIA COMPANY AUDIO/VIDEO SYSTEMS CATEGORY 10-1,1Chome,Ohwatari-machi,Maebashi-city,371-8543,Japan

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