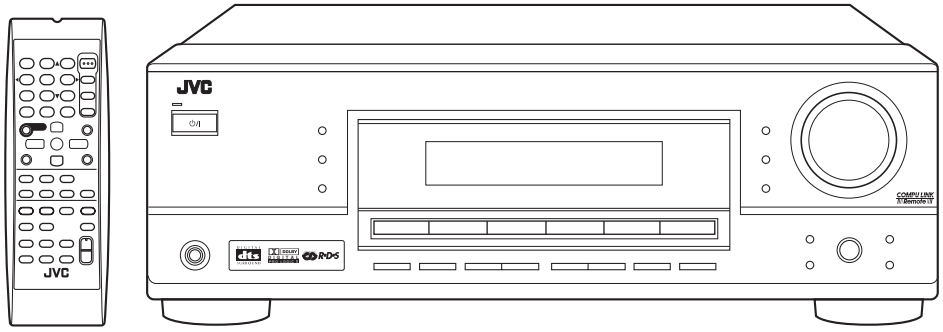
JVC

SERVICE MANUAL

AUDIO/VIDEO CONTROL RECEIVER

RX-5032VSL



COMPU LINK Remote

DIGITAL dts SURROUND

DOLBY DIGITAL PRO LOGIC II

R·D·S

Area Suffix	
E	----- Continental Europe
EN	----- Northern Europe

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No.22038
2003/4

SECTION 1
Important Safety Precautions

1.1 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.

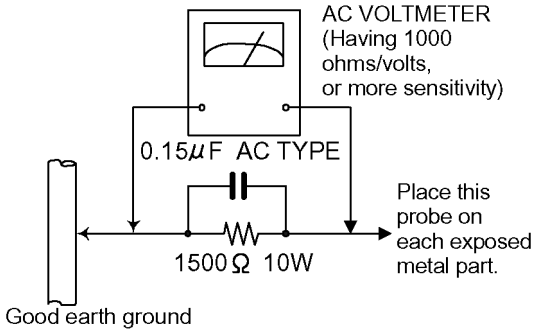
(2) Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturers warranty and will further relieve the manufacture of responsibility for personal injury or property damage 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 reassembling.

(5) Leakage shock hazard testing)
After reassembling 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 1,500 ohm 10W resistor paralleled by a 0.15 µF 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 measure 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.).



1.2 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.

1.3 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.

1.4 Critical parts for safety

In regard with component parts appearing on the silk-screen printed side (parts side) of the PWB diagrams, the parts that are printed over with black such as the resistor (▬), diode (▮) and ICP (●) or identified by the " ⚠ " mark nearby are critical for safety.
When replacing them, be sure to use the parts of the same type and rating as specified by the manufacturer. (Except the JC version)

SECTION 2
Disassembly method

2.1 Removing the top cover (See Fig.1)

(1) From the right and left sides of the main body, remove the four screws **A** attaching the top cover.
(2) From the back side of the main body, remove the three screws **B** attaching the top cover.
(3) Remove the top cover in the direction of the arrow **2** while extending the lower sections of the top cover in the direction of the arrow **1**.

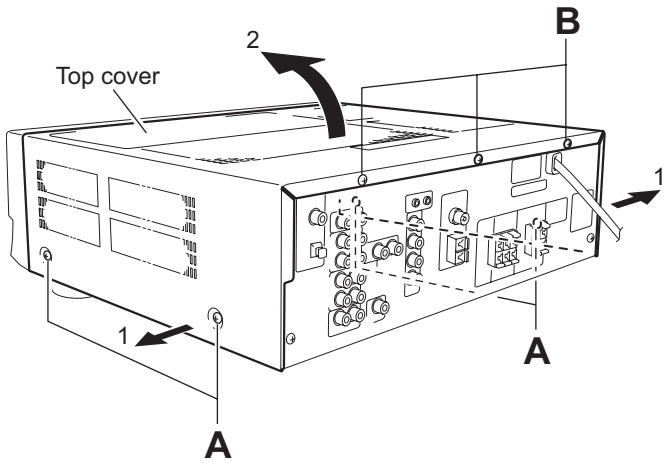


Fig.1

2.2 Removing the front panel assembly (See Figs.2 and 3)

- Prior to performing the following procedure, remove the top cover.

(1) Disconnect the card wire from the connector CN402 on the audio board. (See Fig.2)
(2) Disconnect the card wire from the connector CN201 on the power supply board. (See Fig.2)
(3) Remove the tie band and wire protection board fixing the card wire. (See Fig.2)
(4) Remove the tie band fixing the parallel wires, disconnect the parallel wire from the connector CN403 on the audio board. (See Fig.2)
(5) Remove the three screws **C** attaching the front panel assembly. (See Fig.2)
(6) From the bottom side of the main body, remove the four screws **D** attaching the front panel assembly. (See Fig.3)
(7) Remove the front panel assembly in the direction of the arrow. (See Fig.3)

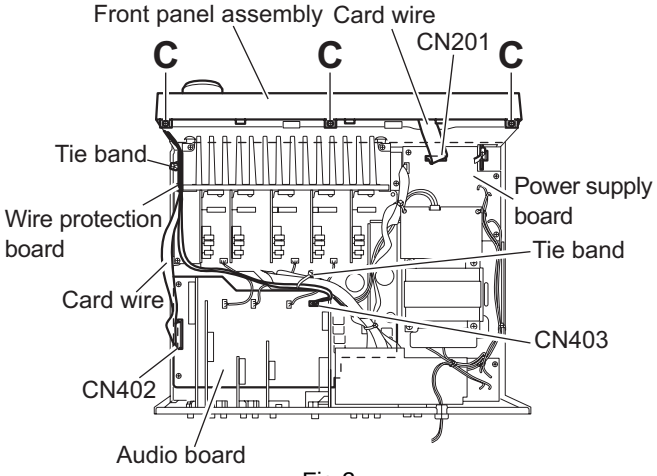


Fig.2

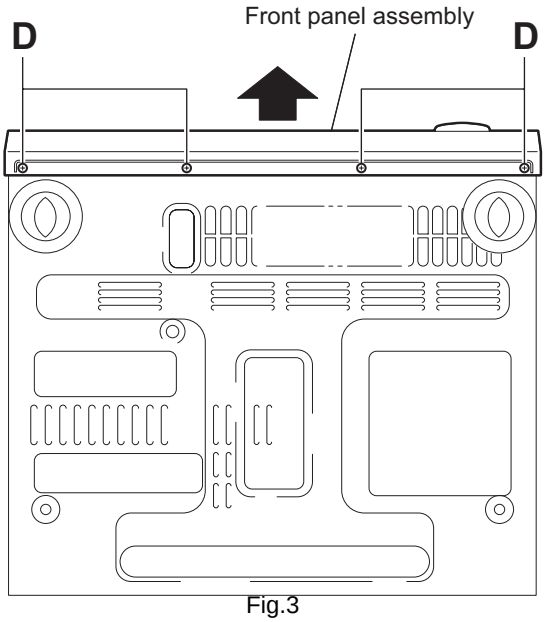


Fig.3

2.3 Removing the rear panel (See Fig.4)

- Prior to performing the following procedure, remove the top cover.
  (1) From the back side of the main body, remove the strain relief from the rear panel in the direction of the arrow.
  (2) Remove the seventeen screws **E** and four screws **F** attaching the rear panel.

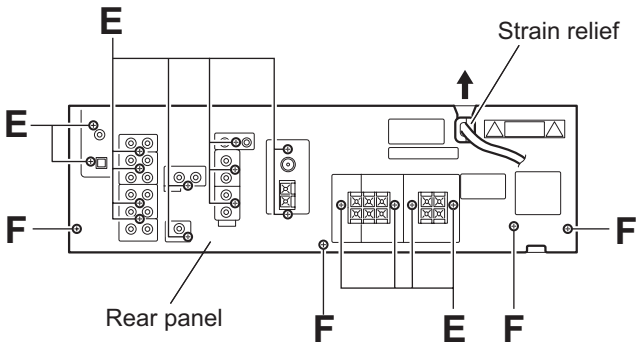


Fig.4

2.4 Removing the DSP board, audio input board, DVD board and video board (See Fig.5)

- Prior to performing the following procedure, remove the top cover and rear panel.
  (1) From the top side of the main body, disconnect the DSP board from the connector CN481 on the audio board.
  (2) Disconnect the audio input board from the connector CN421 on the audio board.
  (3) Disconnect the DVD board from the connector CN431 on the audio board.
  (4) Disconnect the video board from the connector CN441 on the audio board.

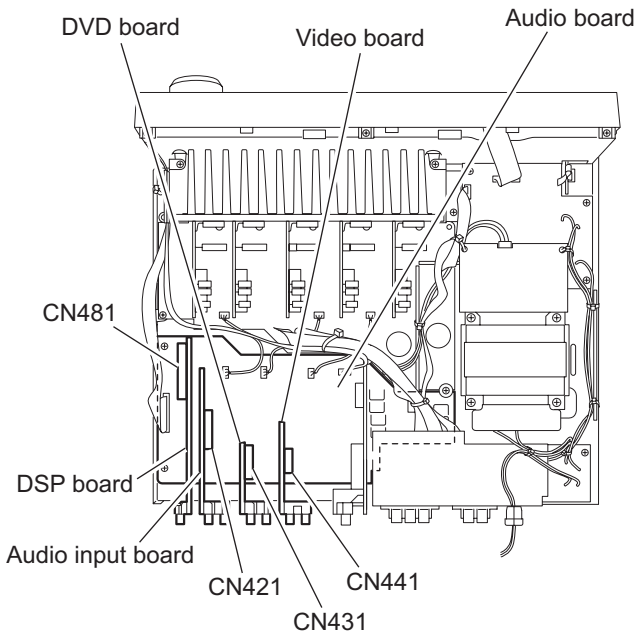


Fig.5

2.5 Removing the tuner board (See Fig.6)

- Prior to performing the following procedure, remove the top cover and rear panel.
  (1) Disconnect the tuner board from the connectors CN411 and CN412 on the audio board.

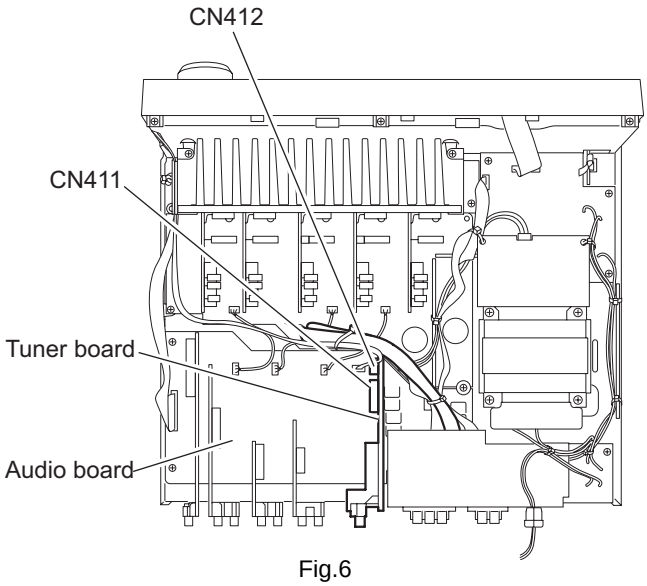


Fig.6

2.6 Removing the audio board (See Fig.7)

- Prior to performing the following procedure, remove the top cover, rear panel, DSP board, audio input board, DVD board, video board and tuner board.
  (1) From the top side of the main body, disconnect the card wire from the connector CN402 on the audio board.
  (2) Disconnect the parallel wire from the connector CN403.
  (3) Disconnect the relay board from the connector CN491 on the power supply board and audio board.
  (4) Disconnect the wires from the connectors CN471, CN472 and CN473 on the audio board.
  (5) Remove the three screws **G** attaching the audio board.
  (6) Loosen the screw **H** attaching the audio board.

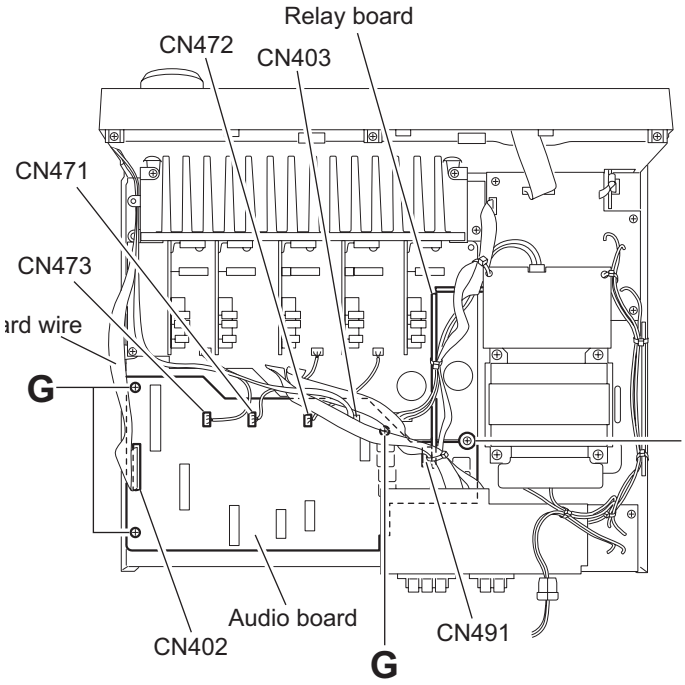


Fig.7

2.7 Removing the speaker terminal board (See Fig.8)

- Prior to performing the following procedure, remove the top cover and rear panel.
  (1) From the top side of the main body, remove the solders from the soldered sections **a** on the speaker terminal board.

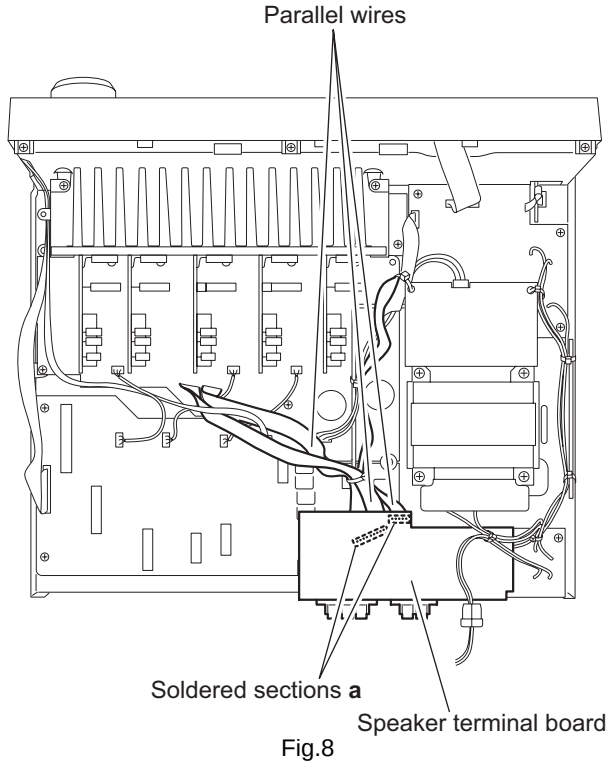


Fig.8

2.8 Removing the main board
(See Fig.9)

- Prior to performing the following procedure, remove the top cover.
  (1) From the top side of the main body, remove the tie bands fixing the wires.
  (2) Remove the tie band and wire protection board fixing the card wire.
  (3) Remove the solders from the soldered section **b** on the speaker terminal board attaching the parallel wires.
  (4) Disconnect the relay board from the connectors (CN291, CN491) on the power supply board and audio board.
  (5) Disconnect the parallel wire from the connector CN241 on the power supply board.
  (6) Disconnect the wire from the connector CN251 on the power transformer board 1.
  (7) Disconnect the wires from the connectors CN471, CN472 and CN473 on the audio board.
  (8) Remove the screw **H**, two screws **J** and four screws **K** attaching the main board.
  (9) Take out the main board.

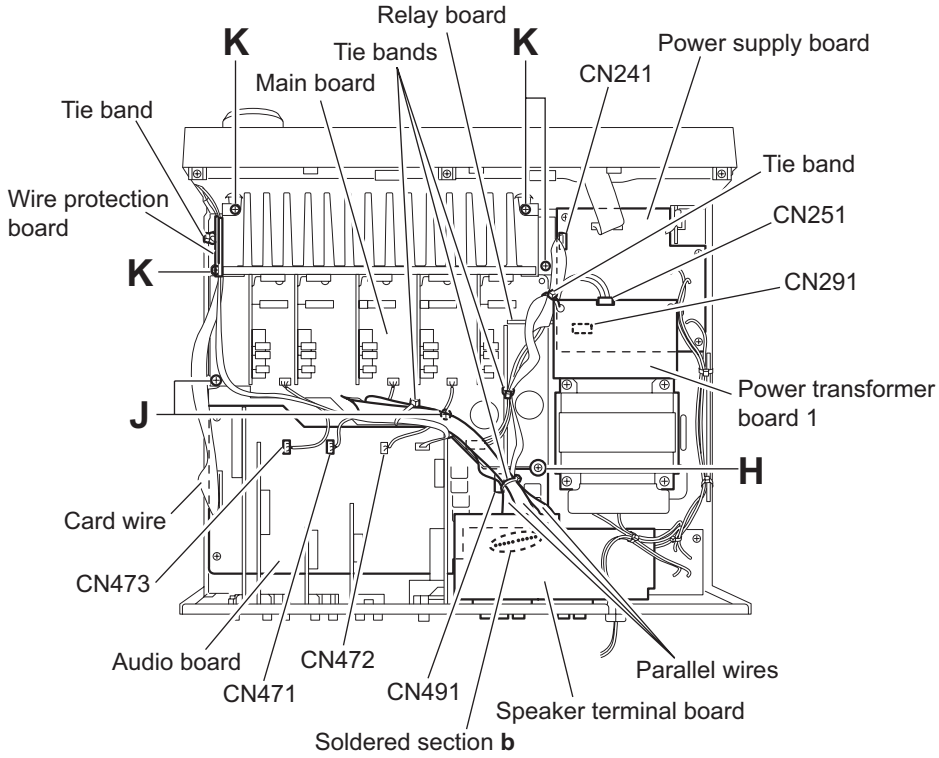


Fig.9

2.9 Removing the heat sink (See Figs.10 and 11)

- Prior to performing the following procedure, remove the top cover and main board.
  (1) Remove the ten screws **L** attaching the heat sink. (See Fig.10)
  (2) From the reverse side of the main board, remove the two screws **M** attaching the heat sink. (See Fig.11)

2.10 Removing the center amp. board, front amp. boards (L/R) and rear amp. boards (L/R) (See Figs.10 and 12)

- Prior to performing the following procedure, remove the top cover and main board.
  (1) Remove the ten screws **L** attaching the heat sink. (See Fig.10)
  (2) Remove the four screws **N** attaching the heat sink. (See Fig.12)
  (3) Disconnect the center amp. board from the connector CN321 on the main board. (See Fig.12)
  (4) Disconnect the front amp. board (L) from the connector CN311 on the main board. (See Fig.12)
  (5) Disconnect the front amp. board (R) from the connector CN312 on the main board. (See Fig.12)
  (6) Disconnect the rear amp. board (L) from the connector CN331 on the main board. (See Fig.12)
  (7) Disconnect the rear amp. board (R) from the connector CN332 on the main board. (See Fig.12)

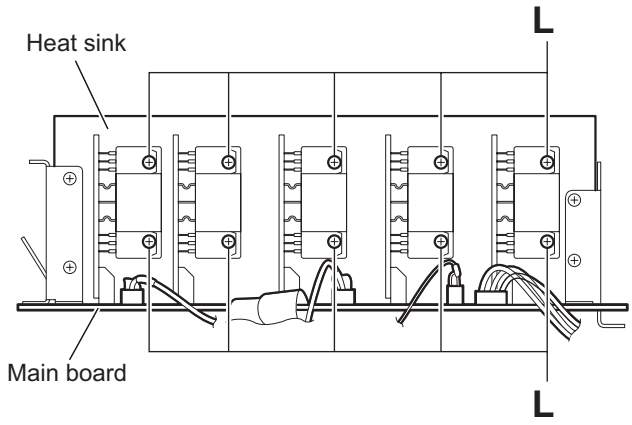


Fig.10

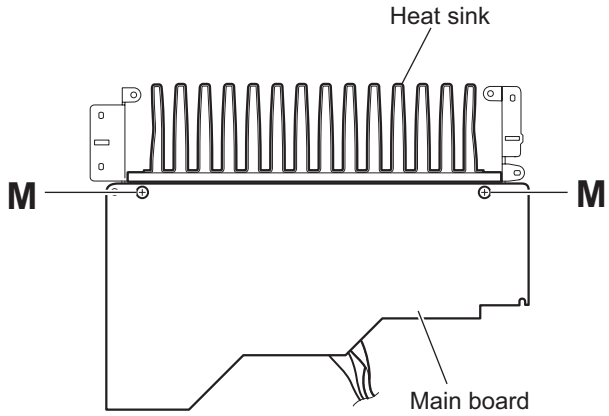


Fig.11

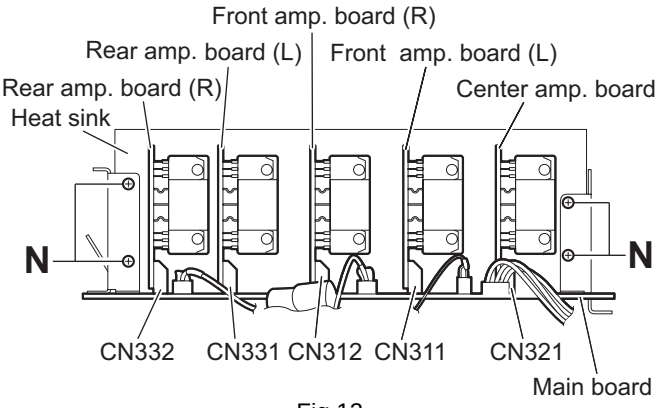


Fig.12

2.11Removing the power transformer (See Fig.13)

- Prior to performing the following procedure, remove the top cover.
  (1) From the top side of the main body, remove the tie bands fixing the wires.
  (2) Remove the solders from the soldered section **c** on the power transformer board 1.
  (3) Remove the solders from the soldered sections **d** on the power transformer board 2.
  (4) Disconnect the wire from the connector CN251 on the power transformer board 1.
  (5) Remove the four screws **P** attaching the power transformer.

2.12Removing the power/fuse board (See Fig.13)

- Prior to performing the following procedure, remove the top cover.
  (1) From the back and top sides of the main body, remove the screw **Q** and screw **R** attaching the power/fuse board.
  (2) Remove the solders from the soldered sections **e** attaching the power cord.
  (3) From the reverse side of the power/fuse board, remove the solders from the soldered sections **f** attaching the wires.

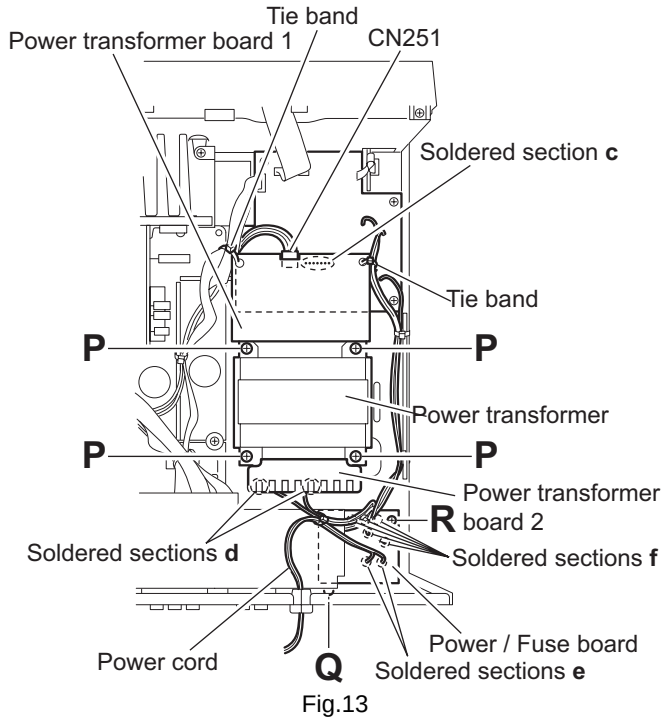


Fig.13

2.13Removing the power supply board (See Fig.14)

- Prior to performing the following procedure, remove the top cover.
  (1) From the top side of the main body, disconnect the parallel wires from the connectors CN203 and CN241 on the power supply board.
  (2) Disconnect the card wire from the connector CN201 on the power supply board.
  (3) Disconnect the relay board from the connector CN291 on the power supply board.
  (4) Disconnect the parallel wire from the connector CN101 on the headphone jack board and remove the tie band.
  (5) Remove the solders from the soldered section **c** on the power transformer board 1.
  (6) Remove the three screws **S** attaching the power supply board.
  (7) Remove the power supply board from the hook **g** of the chassis base bracket in the direction of the arrow, take out the power supply board.
  (8) Turn over the power supply board, remove the solders from the soldered sections **h** attaching the wires.

2.14Removing the headphone jack board (See Figs.14 and 15)

- Prior to performing the following procedure, remove the top cover and front panel assembly.
  (1) From the top side of the main body, disconnect the parallel wire from the connector CN101 on the headphone jack board. (See Fig.14)
  (2) From the front side of the main body, remove the nut and screw **T** attaching the Bracket(phones) to the chassis base. (See Fig.15)

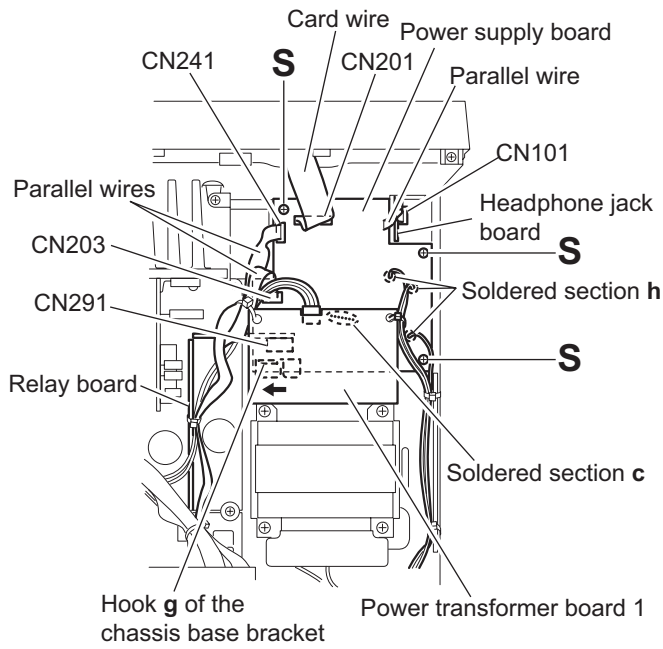


Fig.14

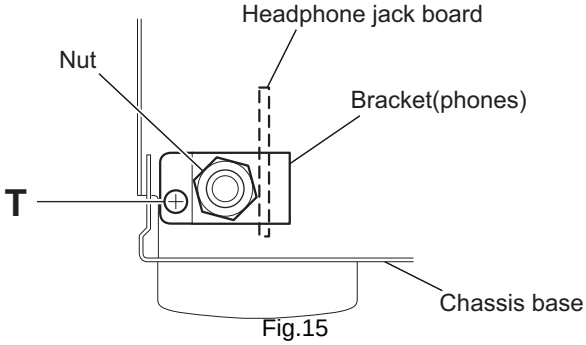


Fig.15

2.15Removing the system control board and power switch board (See Figs.16 and 17)

- Prior to performing the following procedure, remove the top cover and front panel assembly.
  (1) Pull out the volume and jog knobs from the front side of the front panel assembly, remove the nut attaching the system control board. (See Fig.16)
  (2) From the back side of the front panel assembly, remove the nine screws **U** attaching the system control board. (See Fig.17)

  Reference:
  Remove the solders of the soldered section **I** as required.
  (3) Remove the solders of the soldered section **i** on the system control board and disconnect the parallel wire. (See Fig.17)
  (4) Remove the two screws **V** attaching the power switch board. (See Fig.17)

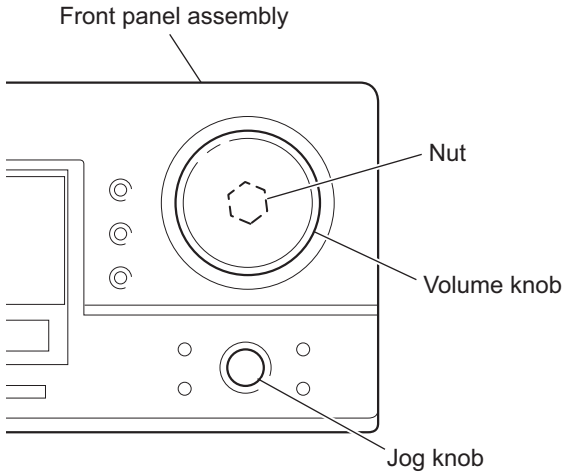


Fig.16

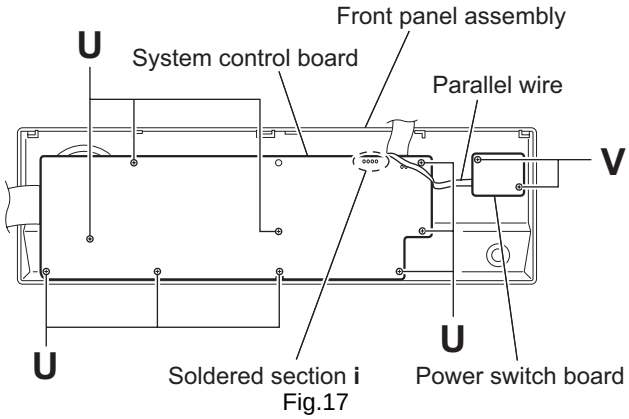


Fig.17

SECTION 3
Adjustment

3.1 Adjustment method

■ Tuner section

1. Tuner range

FM	87.5MHz to 108.0MHz
AM	522kHz to 1629kHz

■ Power amplifier section

Adjustment of idling current

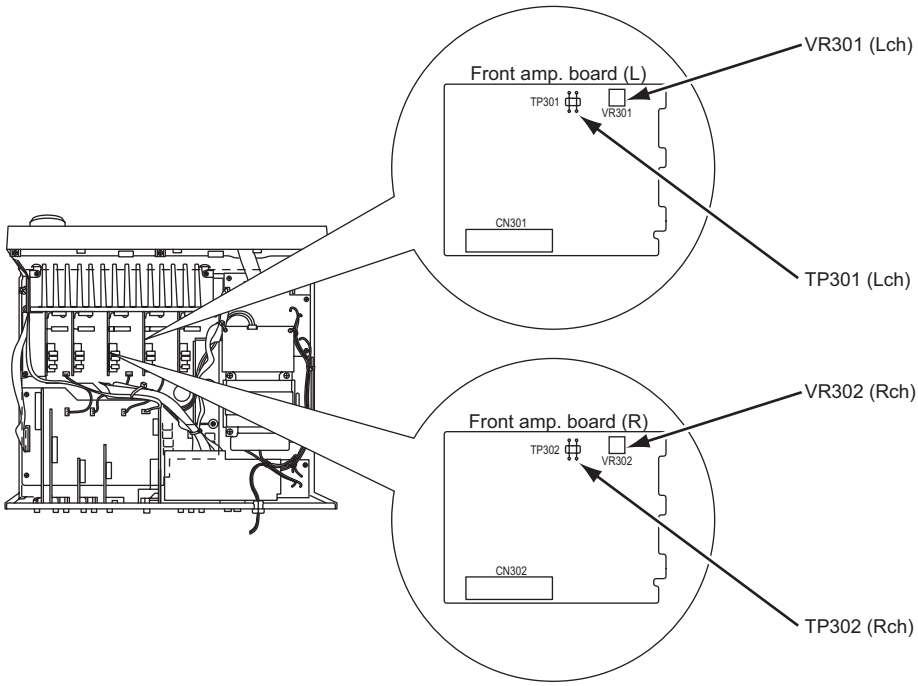
Measurement location	TP301 (Lch) , TP302 (Rch)
Adjustment part	VR301 (Lch) , VR302 (Rch)

Attention
This adjustment does not obtain a correct adjustment value immediately after the amplifier is used (state that an internal temperature has risen).
Please adjust immediately after using the amplifier after turning off the power supply of the amplifier and falling an internal temperature.

<Adjustment method>

1. Set the volume control to minimum during this adjustment. (No signal & No load)
2. Set the surround mode OFF.
3. Turn VR301 and VR302 fully counterclockwise to warm up before adjustment.
   If the heat sink is already warm from previous use the correct adjustment can not be made.
4. For L-ch, connect a DC voltmeter between TP301's B216 and B217 (Lch)
   and, connect it between TP302's B218 and B219 (Rch).
5. Adjust the VR301 (Lch) and VR302 (Rch) so that the DC voltmeter indicates 2.0mV
   immediately after turning the power on.

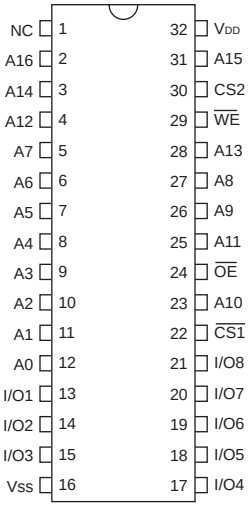
* It is not abnormal though the idling current might not become 0mA even if it is finished to turn variable resistance (VR301, VR302) in the direction of counterclockwise.



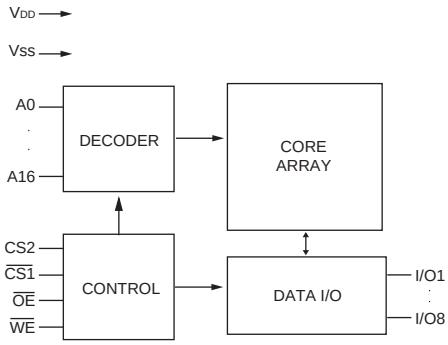
SECTION 4
Description of major ICs

4.1 LP61L1024S-12-X (IC641) : SRAM

- Pin layout



- Block diagram

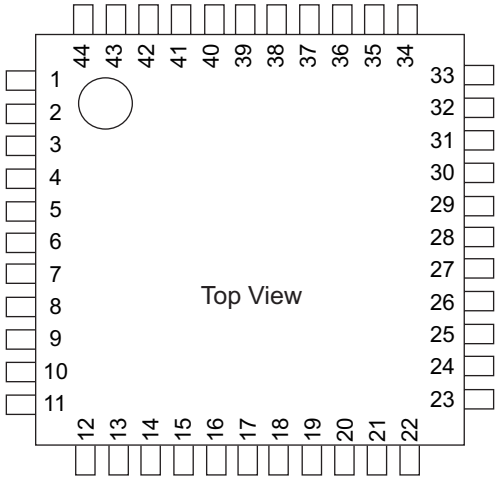


- Pin function

SYMBOL	DESCRIPTION
A0 - A16	Address Input
I/O1 - I/O8	Data Input/Output
$\overline{CS1}$, CS2	Chip Select Inputs
$\overline{WE}$	Write Enable Input
$\overline{OE}$	Output Enable Input
VDD	Power Supply
Vss	Ground
NC	No Connection

4.2 AK4527BVQP (IC601): A/D, D/A converter

• Pin layout



• Pin function

No.	Symbol	I/O	Function
1	SDOS	I	SDTO Source Select Pin (Note 1) "L" : Internal ADC output "H" : DAUX input
2	OSKS	I	Control Mode Select Pin "L" : 3-wire Serial "H" : I2C Bus
3	MIS	-	Soft Mute Pin (Note 1) Connect to GND When this pin goes to "H" soft mute cycle is initialized. When returning to "L" the output mute releases.
4	BICK	I	Audio Serial Data Clock Pin
5	LRCK	I/O	Input Channel Clock Pin
6	SDTI1	I	DAC1 Audio Serial Data Input Pin
7	SDTI2	I	DAC2 Audio Serial Data Input Pin
8	SDTI3	I	DAC3 Audio Serial Data Input Pin
9	SDTO	O	Audio Serial Data Output Pin
10	D,AUX	-	Sub Audio Serial Data Input Pin Connect to GND
11	DFS	-	Double Speed Sampling Mode Pin (Note 1) "L" : Normal Speed "H" : Double Speed
12	DEMI	-	Connect to GND No internal bonding.
13	DEMO	-	Zero Input Detect Enable Pin Connect to GND "L" : mode 7 (disable) at parallel mode
		-	zero detect mode is selectable by DZFM2-0 bits at serial mode.
		-	H : mode 0 (DZF is AND of all six channels)
14	MCKO	-	Output Buffer Power supply Pin 2.7V~5.5V
15	DVDD	I	Digital Power Supply Pin 4.5V~5.5V
16	DVSS	-	De-emphasis Pin 0V
17	$\overline{PD}$	I	Power-Down & Reset Pin When "L" the AK4527B is powered-down and the control registers are reset to default state. If the state of P/S or CAD0-1 changes then the AK4527B must be reset by PDN.
18	XTS	-	Test Pin Connect to GND This pin should be connected to DVSS.
19	ICKS	-	Connect to GND No internal bonding.
20	ADIF	-	Analog Input Format Select Pin Digital Power Supply H : Full-differential input "L" : Single-ended input
21	CAD1	-	Chip Address 1 Pin Connect to GND

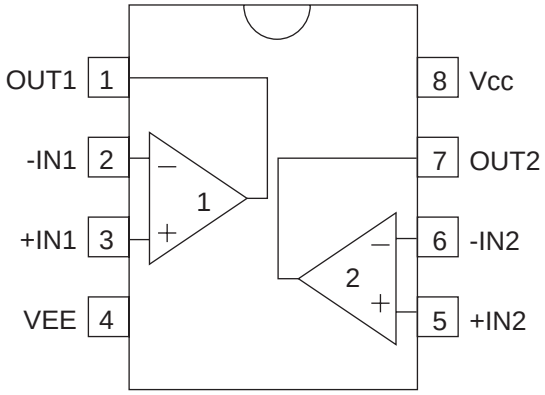
No.	Symbol	I/O	Function
22	CAD0	O	Chip Address 0 Pin Connect to GND
23	LOUT3	O	DAC3 Lch Analog Output Pin
24	ROUT3	O	DAC3 Rch Analog Output Pin
25	LOUT2	O	DAC2 Lch Analog Output Pin
26	ROUT2	O	DAC2 Rch Analog Output Pin
27	LOUT1	O	DAC1 Lch Analog Output Pin
28	ROUT1	O	DAC1 Rch Analog Output Pin
29	LIN-	I	Lch Analog Negative Input Pin
30	LIN+	I	Lch Analog Positive Input Pin
31	RIN-	I	Rch Analog Negative Input Pin
32	RIN+	I	Rch Analog Positive Input Pin
33	VREFL	-	Zero Input Detect 2 Pin (Note 2) Non Connect When the input data of the group 1 follow total 8192LRCK cycles with "0" input data this pin goes to "H".
	OVF	O	Analog Input Overflow Detect Pin (Note 3) This pin goes to "H" if the analog input of Lch or Rch is overflows.
34	VCOM	O	Common Voltage Output PinAVDD/2 Large external capacitor around 2.2uF is used to reduce power-supply noise.
35	VREFH	-	Positive Voltage Reference Input PinAVDD
36	AVDD	-	Analog Power Supply Pin4.5V~5.5V
37	AVSS	-	Analog Ground Pin0V
38	XTI	-	Zero Input Detect 1 Pin (Note 2) Non connect When the input data of the group 1 follow total 8192 LRCK cycles with "0" input data this pin goes to "H".
39	XTO	I	Master Clock Input Pin
40	P1S	-	Parallel / Serial Select Pin "L" : Serial control mode "H" : Parallel control mode
41	$\overline{CS}$	I	Audio Data Interface Format 0 Pin in parallel mode
	CSN	I	Chip select pin in 3-wire serial control mode This pin should be connected to DVDD at I2C bus control mode
42	DIF1	I	Audio Data Interface Format 1 Pin in parallel mode
	SCL/CCLK	I	Control Data Clock Pin in serial control mode I2C = "L" : CCLK(3-wire Serial) I2C = "H" : SCL(I2CBus)
43	LOOP0	I	Loopback Mode 0 Pin in parallel control mode Enables digital loop-back from ADC to 3 DACs.
	SAD/CDTI	I/O	Control Data Input Pin in serial control mode I2C = "L" : CDTI(3-wire Serial) I2C = "H" : SDA(I2CBus)
44	CDTD	I	Loopback Mode 1 Pin (Note 1) Enable all 3 DAC channels to be input from SDTII.

Note:

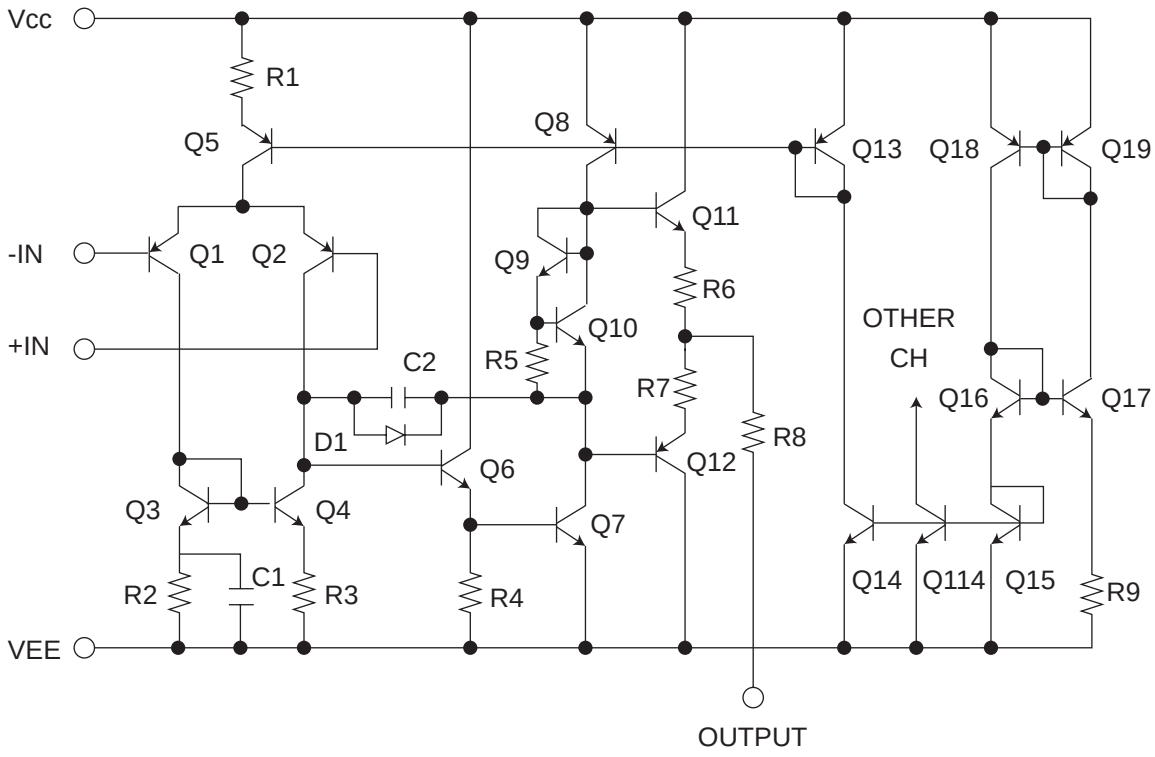
(1) SDOS, SMUTE, DFS, and LOOP1 pins are ORed with register data if P/S = "L".
(2) The group 1 and 2 can be selected by DZFM2-0 bit if P/S = "L" and DZFME = "L".
(3) This pin becomes OVF pin if OVFE bit is set to "1" at serial control mode.
(4) All input pins should not be left floating.

4.3 BA15218F-XE (IC427,IC609,IC610,IC650,IC651,IC661,IC690,IC691) : Dual operation amplifier

- Pin layout

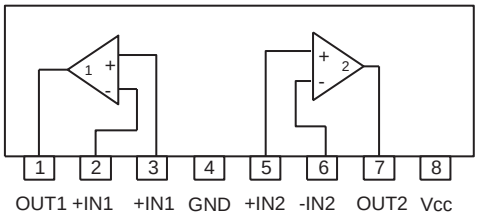


- Block diagram

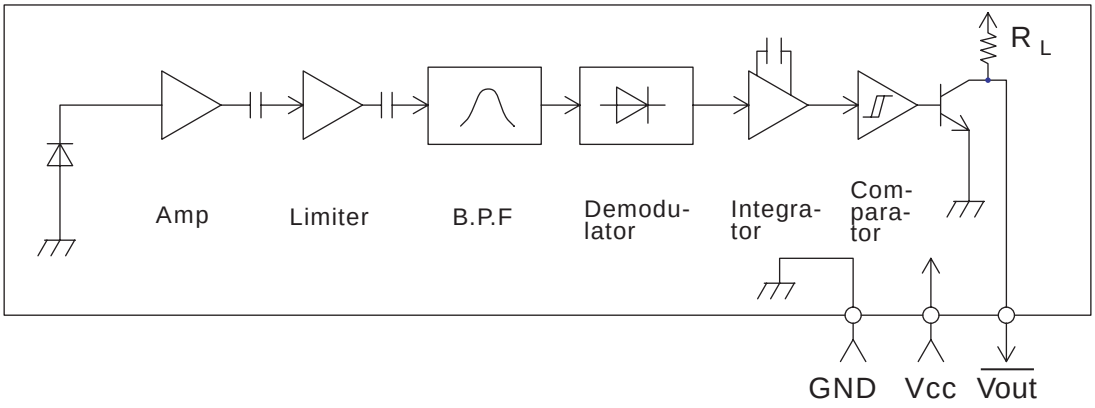


4.4 BA15218N (IC403) : Dual Ope. Amp.

- Pin layout / Block diaglam

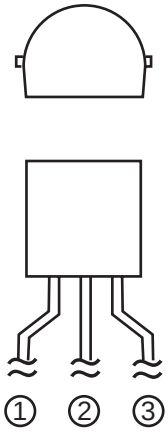


4.5 GP1UM281X (IC703) : Dual operation amplifier

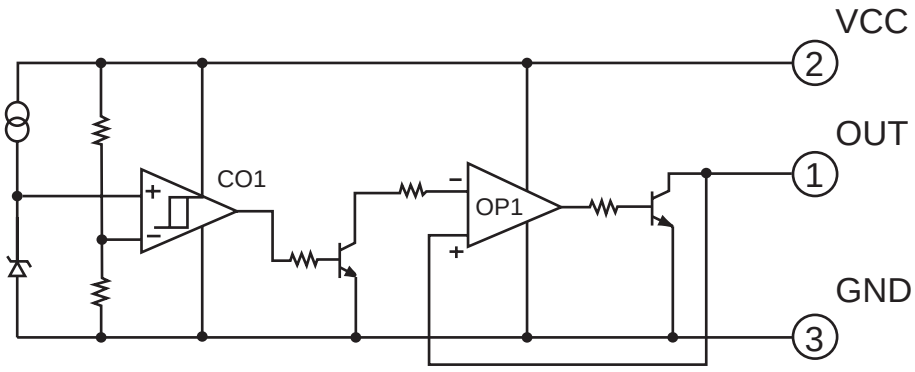


4.6 IC-PST9139-T(IC403) : Regulator

- Terminal layout

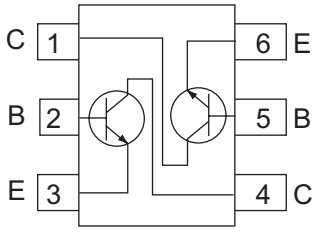


- Block diagram



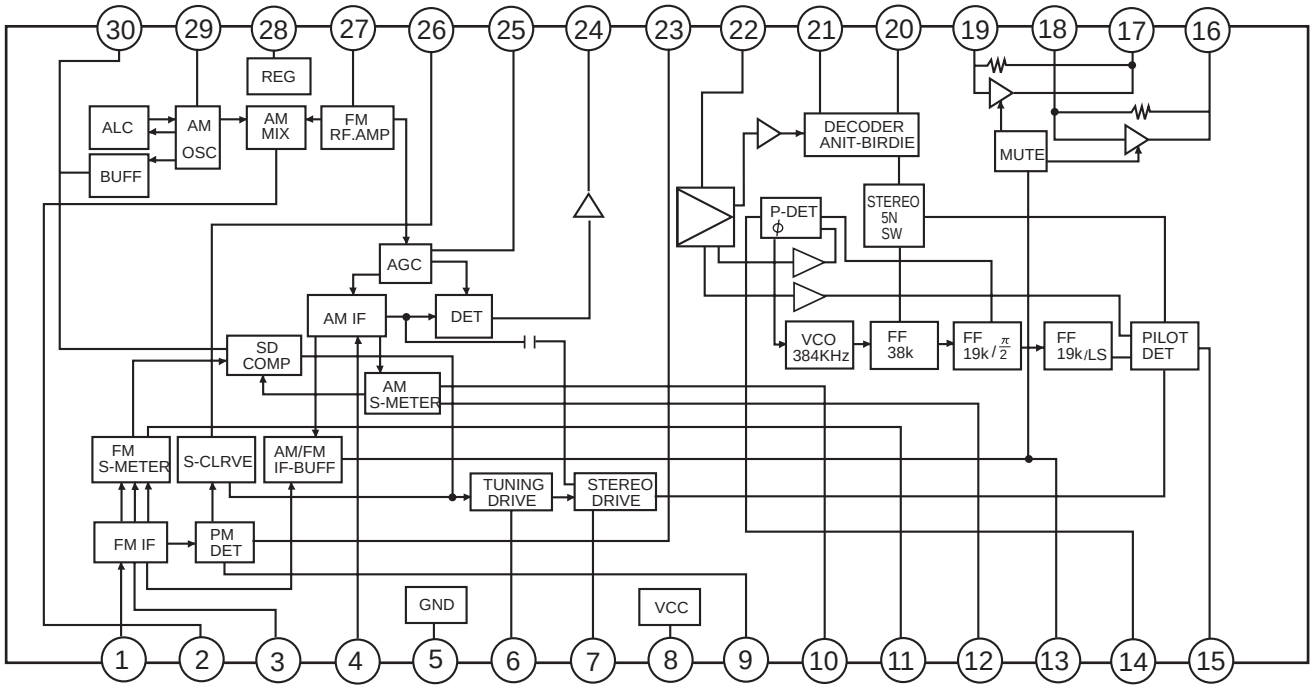
4.7 IMX9-W (IC652, IC662, IC682): Driver

- Pin layout & Block diagram



4.8 LA1838 (IC102) : FM AM IF AMP&detector, FM MPX Decoder

• Block Diagram

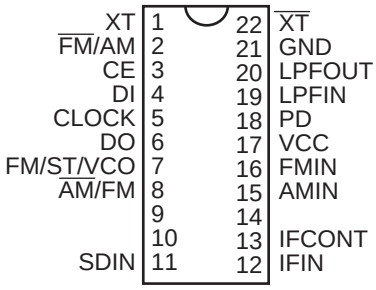


• Pin Function

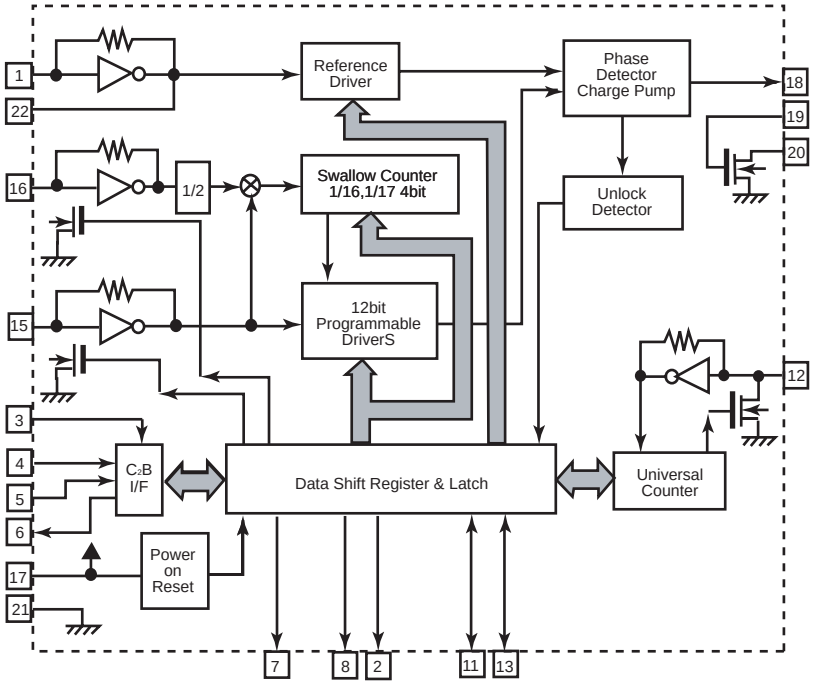
Pin No.	Symbol	I/O	Function
1	FM IN	I	This is an input terminal of FM IF signal.
2	AM MIX	O	This is an out put terminal for AM mixer.
3	FM IF	I	Bypass of FM IF
4	AM IF	I	Input of AM IF Signal.
5	GND	-	This is the device ground terminal.
6	$\overline{\text{TUNED}}$	O	When the set is tunning,this terminal becomes "L".
7	$\overline{\text{STEREO}}$	O	Stereo indicator output. Stereo "L", Mono: "H"
8	VCC	-	This is the power supply terminal.
9	FM DET	-	FM detect transformer.
10	AM SD	-	This is a terminal of AM ceramic filter.
11	FM VSM	O	Adjust FM SD sensitivity.
12	AM VSM	O	Adjust AM SD sensitivity.
13	MUTE	I/O	When the signal of IF REQ of IC121(LC72131) appear, the signal of FM/AM IF output. //Muting control input.
14	FM/$\overline{\text{AM}}$	I	Change over the FM/AM input. "H" :FM, "L" : AM
15	$\overline{\text{MONO}}$/ST	O	Stereo : "H", Mono: "L"
16	L OUT	O	Left channel signal output.
17	R OUT	O	Right channel signal output.
18	L IN	I	Input terminal of the Left channel post AMP.
19	R IN	I	Input terminal of the Right channel post AMP.
20	RO	O	Mpx Right channel signal output.
21	LO	O	Mpx Left channel signal output.
22	MPX IN	I	Mpx input terminal
23	FM OUT	O	FM detection output.
24	AM DET	O	AM detection output.
25	AM AGC	I	This is an AGC voltage input terminal for AM
26	AFC	-	This is an output terminal of voltage for FM-AFC.
27	AM RF	I	AM RF signal input.
28	REG	O	Register value between pin 26 and pin28 besides the frequency width of the input signal.
29	AM OSC	-	This is a terminal of AM Local oscillation circuit.
30	OSC BUFFER	O	AM Local oscillation Signal output.

4.9 LC72136N (IC121) : PLL frequency synthesizer

- Pin layout



- Block diagram



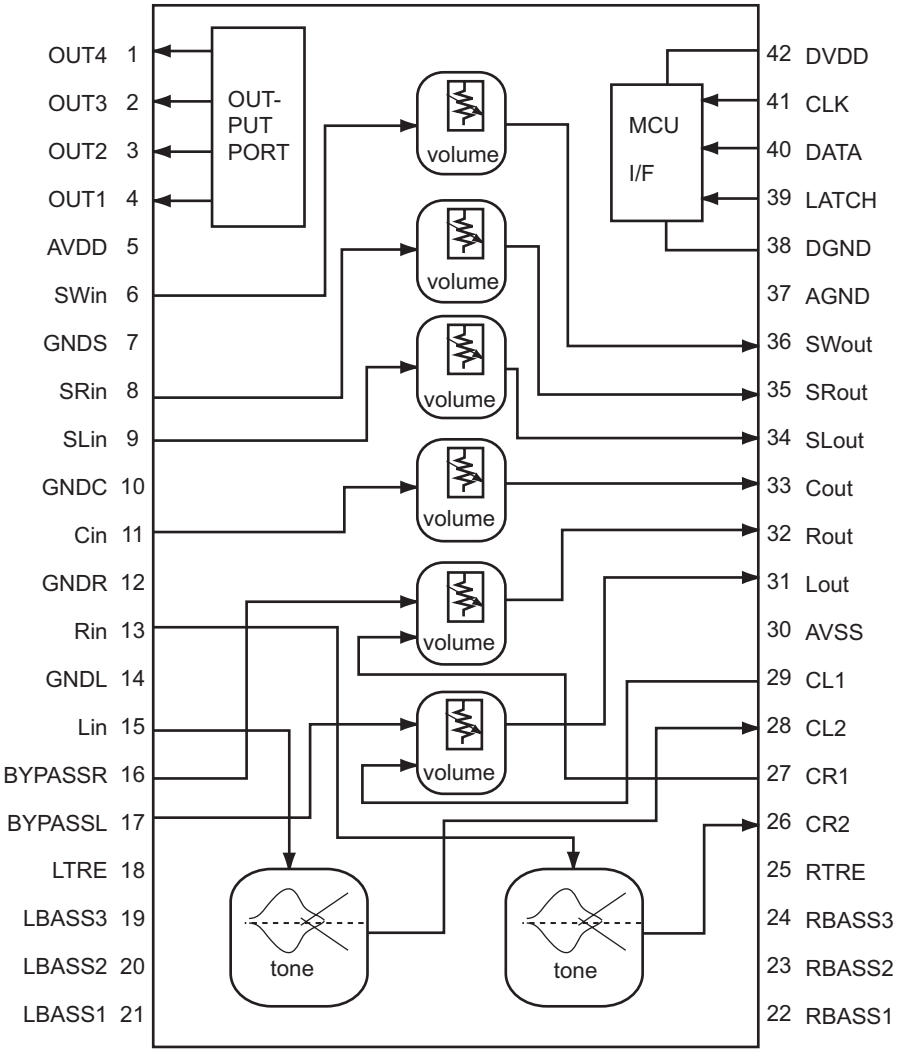
- Pin function

Pin No.	Symbol	I/O	Function
1	XT	I	X'tal oscillator connect (75kHz)
2	$\overline{FM}$/AM	O	LOW:FM mode
3	CE	I	When data output/input for 4pin(input) and 6pin(output): H
4	DI	I	Input for receive the serial data from controller
5	CLOCK	I	Sync signal input use
6	DO	O	Data output for Controller Output port
7	FM/ST/VCO	O	Low: MW mode
8	$\overline{AM}$/FM	O	Open state after the power on reset
9	LW	I/O	Input/output port
10	MW	I/O	Input/output port
11	SDIN	I/O	Data input/output
12	IFIN	I	IF counter signal input

Pin No.	Symbol	I/O	Function
13	IFCONT	O	IF signal output
14		-	Not use
15	AMIN	I	AM Local OSC signal output
16	FMIN	I	FM Local OSC signal input
17	VCC	-	Power suplly(VDD=4.5-5.5V) When power ON:Reset circuit move
18	PD	O	PLL charge pump output (H: Local OSC frequency Height than Reference frequency.L: Low Agreement: Height impedance)
19	LPFIN	I	Input for active lowpassfilter of PLL
20	LPFOUT	O	Output for active lowpassfilter of PLL
21	GND	-	Connected to GND
22	$\overline{XT}$	I	X'tal oscillator(75KHz)

4.10 M62446AFP-X (IC428): 6 channel electronic volume

- Pin layout & Block diagram

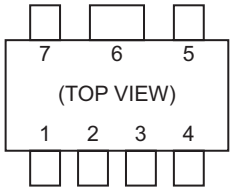


• Pin function

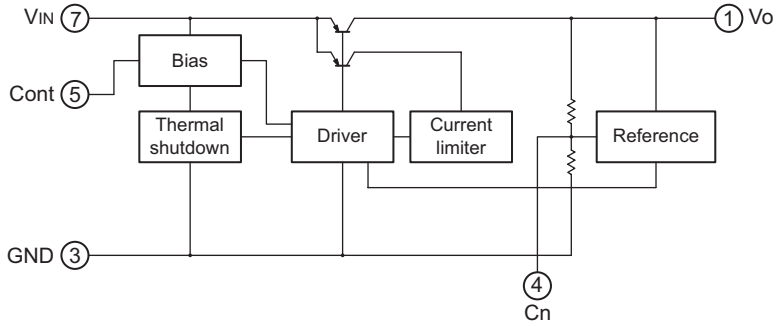
Pin No.	Symbol	I/O	Function
1	OUT4	O	PORT output 4
2	OUT3	O	PORT output 3
3	OUT2	O	PORT output 2
4	OUT1	O	PORT output 1
5	AVDD	-	Analog positive power supply terminal
6	SWin	I	Volume input
7	GNDS	-	Ground terminal
8	SRin	I	Volume input
9	SLin	I	Volume input
10	GNDC	-	Ground terminal
11	Cin	I	Volume input
12	GNDR	-	Ground terminal
13	Rin	I	Tone input
14	GNDL	-	Ground terminal
15	Lin	I	Tone input
16	BYPASSR	I	R channel volume input
17	BYPASSL	I	L channel volume input
18	LTRE	I	Tone treble frequency adjusting terminal
19	LBASS3	I	Tone bass frequency adjusting terminal
20	LBASS2	I	Tone bass frequency adjusting terminal
21	LBASS1	I	Tone bass frequency adjusting terminal
22	RBASS1	I	Tone bass frequency adjusting terminal
23	RBASS2	I	Tone bass frequency adjusting terminal
24	RBASS3	I	Tone bass frequency adjusting terminal
25	RTRE	I	Tone treble frequency adjusting terminal
26	CR2	O	Tone output terminal
27	CR1	I	R channel volume input
28	CL2	O	Tone output terminal
29	CL1	I	L channel volume input
30	AVSS	-	Analog negative power supply terminal
31	Lout	O	L channel output
32	Rout	O	R channel output
33	Cout	O	Volume output
34	SLout	O	Volume output
35	SRout	O	Volume output
36	SWout	O	Volume output
37	AGND	-	Analog ground terminal
38	DGND	-	Digital ground terminal
39	LATCH	I	Latch input terminal
40	DATA	I	Data input terminal
41	CLK	I	Data transfer clock input terminal
42	DVDD	-	Digital power supply terminal

4.11 MM1563DF-X (IC681) : Regulator

- Pin layout



- Block diagram

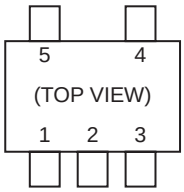


- Pin function

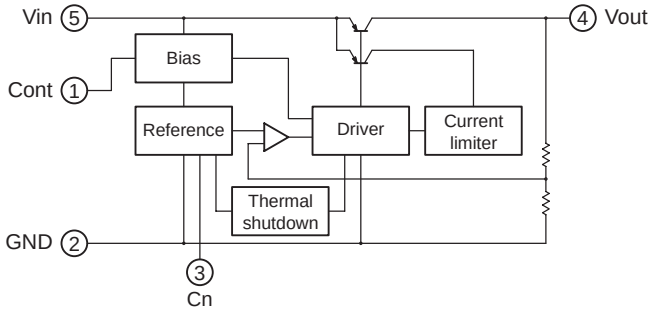
Pin No.	Symbol	Function
1	Vo	Output pin
2	NC	Not connect
3	GND	Ground
4	Cn	Noise decrease pin
5	CONT	Control pin CONT: H → Output: ON; CONT: L → Output: OFF
6	Sub	Substrate pin, The 6pin must be connected to GND.
7	VIN	Input pin

4.12 MM1613DN-X (IC683) : Regulator

• Pin layout



• Block diagram

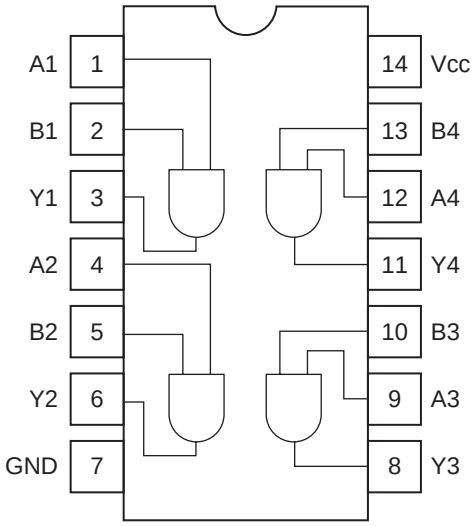


• Pin function

Pin No.	Symbol	Function
1	Cont	ON/OFF Control pin Cont: H → Vo: ON; Cont: L → Vo: OFF Cont pin must be connected with VIN pin, if it is not used.
2	GND	Ground
3	Cn	Noise decrease pin, Connecting 0.01uF capacitor can decrease output noise.
4	Vout	If the noise decrease capacitor is not connected, the pin may be influenced by outside noise. Output pin, The capacitor must be connected with output pin more than 1uF.
5	Vin	Input pin The capacitor is required to connect with input pin more than 1uF.

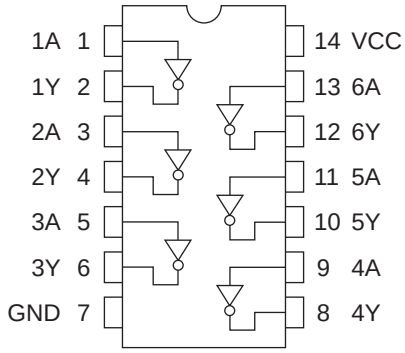
4.13 MM74HC08SJ-X (IC611) : Quad. 2-input AND gates

• Pin layout & Block diagram



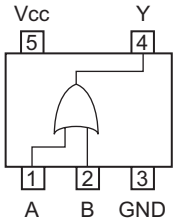
4.14 MM74HCU04SJ-X (IC621) : Inverter

- Pin Layout



4.15 NC7ST32P5-X (IC672) : 2-Input OR Gate

- Pin layout & Block diagram



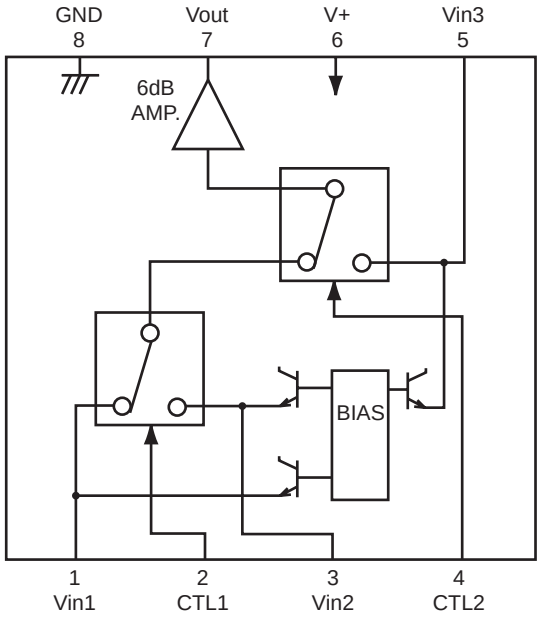
- Truth table

INPUTS		OUTPUT
A	B	Y
L	L	L
L	H	H
H	L	H
H	H	H

H : HIGH logic level
L : LOW logic level

4.16 NJM2246D (IC501) : Video switch

- Pin layout & Block diaglam

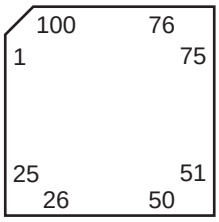


Control input - output signal

CTL 1	CTL 2	Output
L	L	VIN 1
H	L	VIN 2
L/H	H	VIN 3

4.17 MN101C35DME (IC701) : System control & FL driver

- Pin layout



- Pin function

Pin No.	Symbol	I/O	Function
1	TXD / SBO0 / P00	I	VOL. JOG IN_1
2	RXD / SBI0 / P01	I	VOL. JOG IN_2
3	SBT0 / P02	I/O	DATA (PLL)
4	SBO1 / P03	O	CLK (PLL)
5	SBI1 / P04	O	CE (PLL)
6	SBT1 / P05	I	VIDEO S/C DVD
7	BUZZER / P06	I	VIDEO S/C VCR
8	VDD	-	+5V
9	OSC2	O	8MHz oscillation terminal
10	OSC1	I	8MHz oscillation terminal
11	VSS	-	Ground
12	XI	I	Connect to ground
13	XO	O	Not connect
14	MMOD	I	Connect to ground
15	VREF-	-	Ground
16	AN0 / PA0	I	Key input 1 (7 key)
17	AN1 / PA1	I	Key input 2 (7 key)
18	AN2 / PA2	I	Key input 3 (7 key)
19	AN3 / PA3	I	Key input 4 (7 key)
20	AN4 / PA4	I	Key input 5 (7 key)
21	AN5 / PA5	I	INH IN
22	AN6 / PA6	I	Chip select 1
23	AN7 / PA7	I	Chip select 2
24	VREF+	-	+5V
25	P07	I	VIDEO S/C DBS
26	/RST / P27	I	Reset input
27	RMOUT / TM0IO / P10	O	RDS CLK OUT (RDS)
28	TM1IO / P11	I	DCS input
29	TM2IO / P12	O	DCS output
30	TM3IO / P13	I	AV link VCR input
31	TM4IO / P14	O	AV link VCR output
32	P15	I/O	RDS DATA (RDS)
33	IRQ0 / P20	I	PROTECTOR IN
34	SENS / IRQ1 / P21	I	Remocon input
35	IRQ2 / P22	I	TUNED IN (TUNER)
36	IRQ3 / P23	I	STEREO IN (TUNER)
37	IRQ4 / P24	I	RDS DAVN (RDS)
38	P25	I	Self check input
39	SBO2 / P30	O	COMMAND (DSP)
40	SBI2 / P31	I	STATUS (DSP)
41	SBT2 / P32	O	CLK (DSP)
42	P50	I	MULTI. JOG_1
43	P51	I	MULTI. JOG_2
44	P52	O	RELAY S
45	P53	O	RELAY C
46	P54	O	RELAY L/R 1
47	DGT17 / P67	O	RELAY L/R 2
48	DGT16 / P66	O	RELAY HEADPHONE
49	DGT15 / P65	O	GRID 16
50	DGT14 / P64	O	GRID 15

Pin No.	Symbol	I/O	Function
51	DGT13 / P63	O	GRID14
52	DGT12 / P62	O	GRID13
53	DGT11 / P61	O	GRID12
54	DGT10 / P60	O	GRID11
55	DGT9 / P41	O	GRID10
56	DGT8 / P40	O	GRID9
57	SEG0 / DGT7 / P77	O	GRID8
58	SEG1 / DGT6 / P76	O	GRID7
59	SEG2 / DGT5 / P75	O	GRID6
60	SEG3 / DGT4 / P74	O	GRID5
61	SEG4 / DGT3 / P73	O	GRID4
62	SEG5 / DGT2 / P72	O	GRID3
63	SEG6 / DGT1 / P71	O	GRID2
64	SEG7 / DGT0 / P70	O	GRID1
65	SEG8 / P87	O	SEGMENT1
66	SEG9 / P86	O	SEGMENT2
67	SEG10 / P85	O	SEGMENT3
68	SEG11 / P84	O	SEGMENT4
69	SEG12 / P83	O	SEGMENT5
70	SEG13 / P82	O	SEGMENT6
71	SEG14 / P81	O	SEGMENT7
72	SEG15 / P80	O	SEGMENT8
73	SEG16 / P97	O	SEGMENT9
74	SEG17 / P96	O	SEGMENT10
75	SEG18 / P95	O	SEGMENT11
76	SEG19 / P94	O	SEGMENT12
77	SEG20 / P93	O	SEGMENT13
78	SEG21 / P92	O	SEGMENT14
79	SEG22 / P91	O	SEGMENT15
80	SEG23 / P90	O	SEGMENT16
81	SEG24 / PC2	O	
82	SEG25 / PC1	O	
83	SEG26 / PC0	O	
84	SEG27 / PB7	O	
85	SEG28 / PB6	O	
86	SEG29 / PB5	O	RESET (DSP)
87	SEG30 / PB4	O	READY (DSP)
88	SEG31 / PB3	O	POWER ON
89	SEG32 / PB2	O	SOURCE MUTE
90	SEG33 / PB1	O	SUBWOOFER MUTE
91	SEG34 / PB0	O	TUNER MUTE
92	SEG35 / PD7	O	STANDBY LED
93	SEG36 / PD6	O	SURROUND
94	SEG37 / PD5	O	DATA (A.SW)
95	SEG38 / PD4	O	CLK (A.SW)
96	SEG39 / PD3	O	STB (A.SW)
97	SEG40 / PD2	O	LATCH (VOL)
98	SEG41 / PD1	O	DATA (VOL)
99	SEG42 / PD0	O	CLK (VOL)
100	VPP	-	VPP

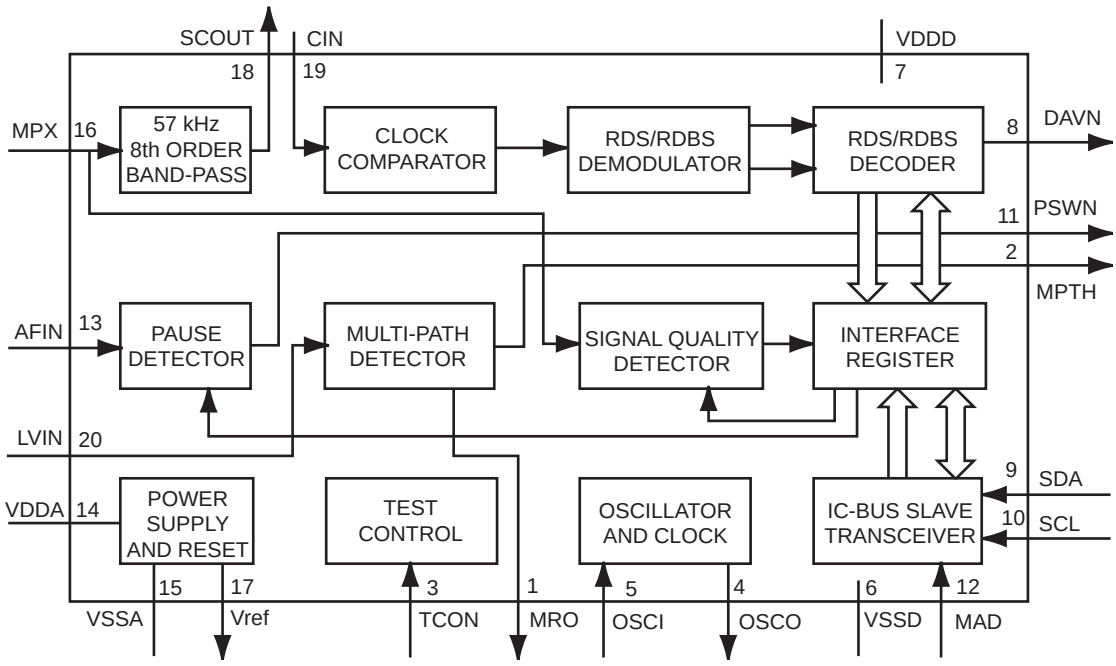
4.18 SAA6588 (IC191) : RDS Detector

• Terminal Layout

• Pin Function

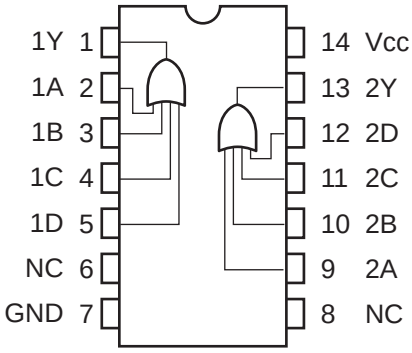
Pin No.	Symbol	I/O	Function
1	MRO	O	Multi-path rectifier output
2	NC	-	Non connect
3	GND	I	Test control input pin
4	OSCO	O	Oscillator output
5	OSCI	I	Oscillator input
6	VSSD	-	Digital ground (0V)
7	VDDD	-	Digital power supply (5V)
8	DAVN	O	Data available output (active LOW)
9	SDA	I/O	IC-bus serial data I/O
10	SCL	I	IC-bus serial clock input
11	NC	-	Non connect
12	GND	-	Connect to ground
13	NC	-	Non connect
14	VDDA	-	Analog power supply (5V)
15	VSSA	-	Connect to ground
16	MPX	I	Multiplex input signal
17	Vref	O	Reference voltage output
18	SCOUT	O	Band-pass filter output
19	CIN	O	Comparator output
20	NC	I	Level input

• Block Diagram



4.19 TC74HC4072AF-X (IC612) : OR gate

- Block diagram



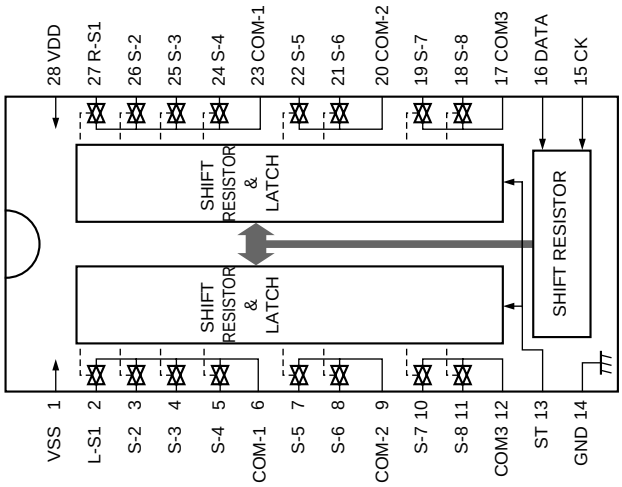
- Truth table

A	B	C	D	Y
H	X	X	X	H
X	H	X	X	H
X	X	H	X	H
X	X	X	H	H
L	L	L	L	L

X : Don't care

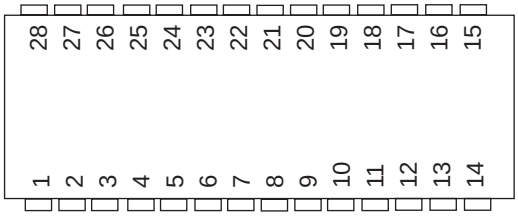
4.20 TC9164AN (IC402) : Analog switch

- Pin layout & Block Diagram

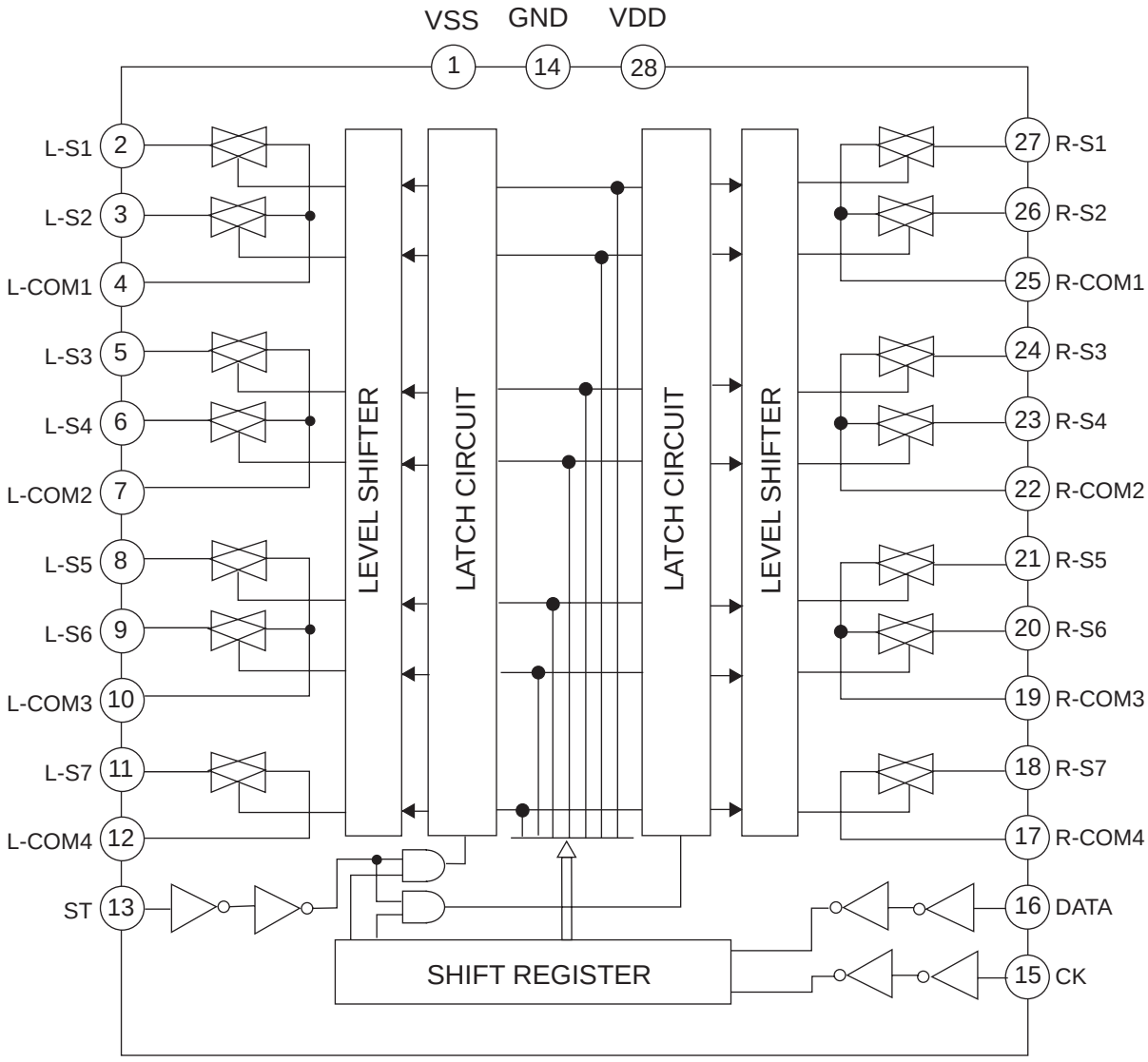


4.21 TC9162AF-X (IC423) : Analog switch

- Pin Layout



- Block Diagram



4.22 TC9446F-025 (IC631): Digital signal processor for dolby digital (AC-3) / DTS audio decode

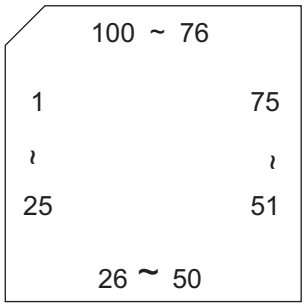
- Pin Function

Pin No.	Symbol	I/O	Function
1	RST	I	Reset signal input terminal (L:reset H: normal operation)
2	MIMD	I	Microcomputer interface mode selection input terminal (L:serial H:IC bus)
3	MICS	I	Microcomputer interface chip select input terminal
4	MILP	I	Microcomputer interface latch pulse input
5	MIDIO	I/O	Microcomputer interface data I/O terminal
6	MICK	I	Microcomputer interface clock input terminal
7	MIACK	O	Microcomputer interface acknowledge output terminal
8~11	FI0~3	I	Flag input terminal 0~3
12	IRQ	I	Interrupt input terminal
13	VSS	-	Digital ground terminal
14	LRCKA	I	Audio interface LR clock input terminal A
15	BCKA	I	Audio interface bit clock input terminal A
16~18	SDO0~2	O	Audio interface data output terminal 0
19	SD03	-	Non connect
20	LRCKB	I	Audio interface LR clock input terminal B
21	BCKB	I	Audio interface bit clock input terminal B
22	SDT0	I	Audio interface data input terminal 0
23	SDT1	I	Audio interface data input terminal 1
24	VDD	-	Power supply for digital circuit
25	LRCKOA	O	Audio interface LR clock output terminal A
26	BCKOA	O	Audio interface bit clock output terminal A
27, 28	TEST0,1	I	Test input terminal 0/1 (L:test H: normal operation)
29~30	LRCKOBBCKOB	-	Non connect
31	TXO	O	SPDIF Output
32, 33	TEST2,3	I	Test input terminal (L:test H: normal operation)
34	RX	I	SPDIF input terminal
35	VSS	-	Ground terminal for digital circuit
36	TSTSUB0	I	Test sub input terminal 0 (L:test H: normal operation)
37	FCONT	O	VCO Frequency control output terminal
38, 39	TSTSUB1TSTSUB2	I	Test sub input terminal 12 (L:test H: normal operation)
40	PDO	O	Phase detect signal output terminal
41	VDDA	-	Power supply for analog circuit
42	PLON	I	Clock selection input terminal (L:external clock H:VCO clock)
43	AMPI	I	amplifier input terminal for LPF
44	AMPO	O	amplifier output terminal for LPF
45	CKI	I	External clock input terminal
46	VSSA	-	Ground terminal for analog circuit
47	CKO	O	DIR Clock output terminal
48	LOCK	O	VCO Lock output terminal
49	VSS	-	Ground terminal for digital circuit
50	WR	O	External SRAM writing signal output terminal
51	OE	O	External SRAM output enable signal output terminal
52	CE	O	External SRAM chip enable signal output terminal
53	VDD	-	Power supply terminal for digital circuit
54~61	IO7~0	I/O	External SRAM data I/O terminal 7~0
62	VSS	-	Ground terminal for digital circuit
63~70	AD0~7	O	External SRAM address output terminal 0~7
71	VDD	-	Power supply terminal for digital circuit
72~80	AD8~16	O	External SRAM address output terminal 8~16
81	VSS	-	round terminal for digital circuit
82~89	PO0~7	O	General purpose output terminal 0~7
90	VDDDL	-	Power supply terminal for DLL
91	LPFO	O	LPF output terminal for DLL
92, 93	DLON,DLCKS	I	Refer to the undermentioned table
94	SCKO	-	Non connect
95	VSSDL	-	Ground terminal for DLL
96	SCKI	I	External system clock input terminal
97	VSSX	-	Ground terminal for oscillation circuit
98, 99	XO,XI	I/O	Oscillation I/O terminal
100	VDDX	-	Power supply terminal for oscillation circuit

DLCKS terminal	DLON terminal	DLL clock setting
L	L	SCKI input (DLL circuit OFF)
L	H	Four times XI clock
H	L	Three times XI clock
H	H	Six times XI clock

4.23 UPD784215AGC167 (IC671): Digital signal controller

- Pin layout



- Pin function

Pin No.	Symbol	I/O	Function
1~8		-	Non connect
9	VDD	-	Power supply terminal
10	X2	O	Connecting the crystal oscillator for system main clock
11	X1	I	Connecting the crystal oscillator for system main clock
12	VSS	-	Connect to GND
13	XT2	O	Connecting the crystal oscillator for system sub clock
14	XT1	I	Connecting the crystal oscillator for system sub clock
15	RESET	I	System reset signal input
16	AUTODATA	I	Output of DSP to general-purpose port
17	LOCK	I	Output of DSP to general-purpose port
18	DIGITAL0	I	Output of DSP to general-purpose port
19	FORMAT	I	Output of DSP to general-purpose port
20	CHANNEL	I	Output of DSP to general-purpose port
21	ERR	I	Output of DSP to general-purpose port
22	REST IN	I	Reset signal input
23	AVDD	-	Power supply terminal
24	AVREF0	-	Connect to GND
25		-	Connect to GND
26		-	Connect to GND
27		-	Connect to GND
28		-	Connect to GND
29		-	Connect to GND
30		-	Connect to GND
31		-	Connect to GND
32		-	Connect to GND
33	AVSS	-	Connect to GND
34,35		-	Non connect
36	AV REF1	-	Power supply terminal
37	RX	-	Not use
38	TX	-	Not use
39		-	Non connect
40	DSPCOM	I	Communication port from IC701
41	DSPSTS	O	Status communication port to IC701
42	DSPCLK	I	Clock input from IC701
43	DSPRDY	I	Ready signal input from IC701
44		-	Non connect

Pin No.	Symbol	I/O	Function
45	MIDIO IN	I/O	Interface I/O terminal with microcomputer
46	MIDIO OUT	I/O	Interface I/O terminal with microcomputer
47	MICK	O	Interface I/O terminal with microcomputer of clock signal
48	MICS	O	Interface I/O terminal with microcomputer of chip select
49	MILP	O	Interface I/O terminal with microcomputer
50	MIACK	O	Interface I/O terminal with microcomputer
51		-	Non connect
52		-	Non connect
53	DSPRST	O	Reset signal output of DSP
54~63		-	Non connect
64	CODEC OUT	I/O	Interface I/O terminal with microcomputer
65	CODEC IN	I/O	Interface I/O terminal with microcomputer
66	CODEC CLK	O	Interface I/O terminal with microcomputer of clock signal
67	CODEC CS	O	Interface I/O terminal with microcomputer of chip select
68	CODEC XTS	-	Non connect
69		-	Non connect
70		-	Non connect
71	PD	O	Reset signal output
72	GND	-	Connect to GND
73		-	Non connect
74		-	Non connect
75		-	Non connect
76		-	Non connect
77		-	Non connect
78		-	Non connect
79		-	Non connect
80		-	Non connect
81	VDD	-	Power supply
82		-	Non connect
83		-	Non connect
84	ANA/T-TONE	O	Test tone control
85	LEF-MIX	O	Control at output destination of LFE channel
86		-	Non connect
87	D.MUTE	O	Mute of the digital out terminal is controlled
88	S.MUTE	O	Mute of the audio signal is controlled
89		O	Non connect
90	ASW1	O	Selection of digital input selector
91	ASW2	-	Selection of digital input selector
92	ASW3	-	Selection of digital input selector
93	ASW4	-	Selection of digital input selector
94	TEST	-	Test terminal
95		-	Non connect
96		-	Non connect
97		-	Non connect
98		-	Non connect
99		-	Non connect
100		-	Non connect

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