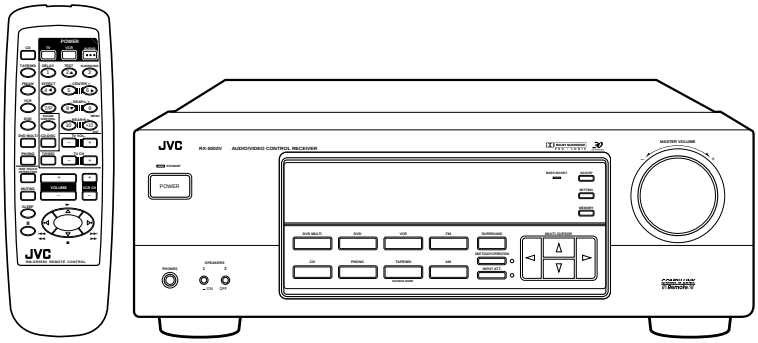
JVC

SERVICE MANUAL

AUDIO/VIDEO CONTROL RECEIVER

RX-5000VBK
RX-5001VGD

Area Suffix	
UF	China
US	Singapore



COMPU LINK Remote

3D-PHONIC

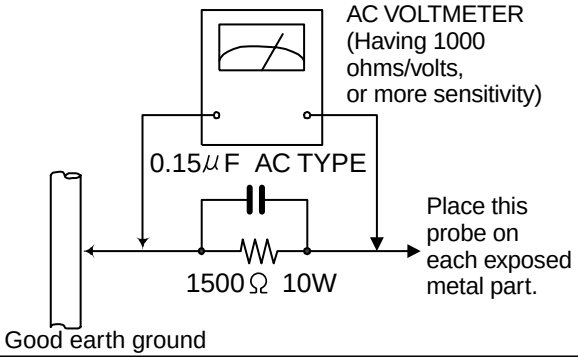
DOLBY SURROUND PRO • LOGIC

Contents

No.20883
Nov. 2000

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 1,500Ω 10W 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 eachexposed 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.**

Disassembly method

■ Removing the top cover (See Fig.1)

1. Remove 4 screws "A" on both sides of the top cover and 3 screws "B" on the rear side.
2. Lift the back of the top cover spreading both sides to remove.

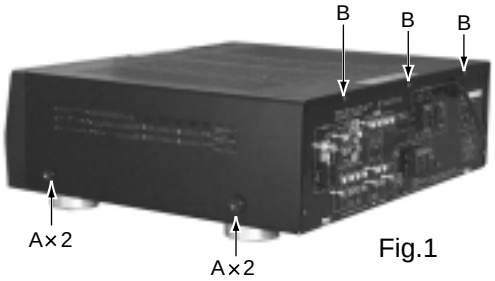


Fig.1

■ Removing the front panel assembly (See Fig.2,3)

1. Remove the top cover.
2. Remove 4 screws "C" on the bottom side and 3 screws "D" on the top side.
3. Disconnect the wire CN811 on the main board.
4. Disconnect the wire CN314 on the audio & source selector board.
5. Remove the front panel assembly.

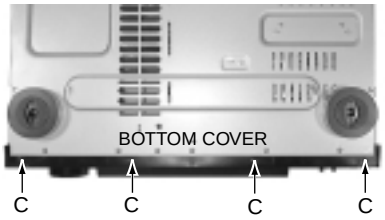


Fig.2

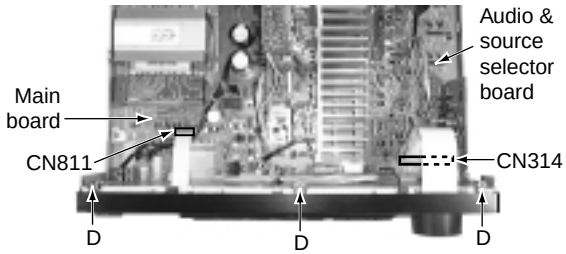


Fig.3

■ Removing the rear panel (See Fig.4)

1. Remove the top cover.
2. Remove 21 screws "E" on the rear panel.
3. Remove 3 screws "F" on the rear panel.
4. Remove the power cord stopper up side.
5. Remove the rear panel.

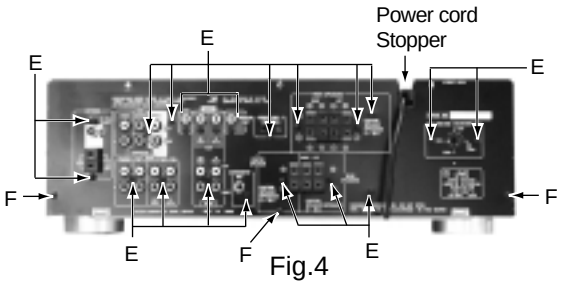


Fig.4

■ Removing the tuner board and video board (See Fig.5)

1. Remove the rear panel.
2. Remove 1 screw "G" on the video board
3. Disconnect the connector CN311 on the video board
4. Disconnect the connector CN111 on the audio & source selector board.

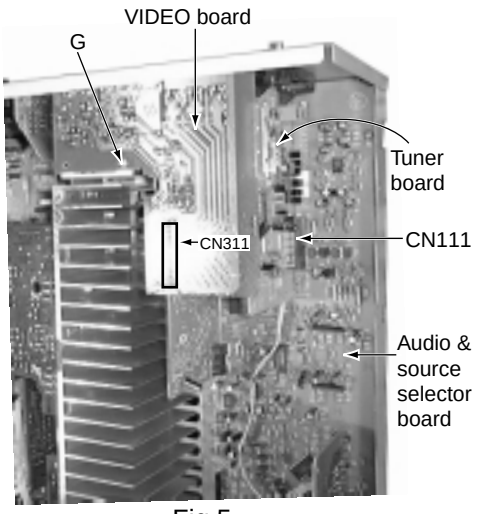


Fig.5

■ Removing the audio & source selector board (See Fig.6)

1. Remove the rear panel.
2. Remove the video board and Tuner board.
3. Disconnect the connector CN512 and CN619 on the audio & source selector board.
4. Disconnect to the card wire CN314 on the audio & source selector board.
5. Disconnect the connector CN712 on the AMP board.
6. Each tie band is cut out.
7. Pullout the connection board.
8. Remove 4 screws "H" on the audio & source selector board.
9. Remove the audio & source selector board.

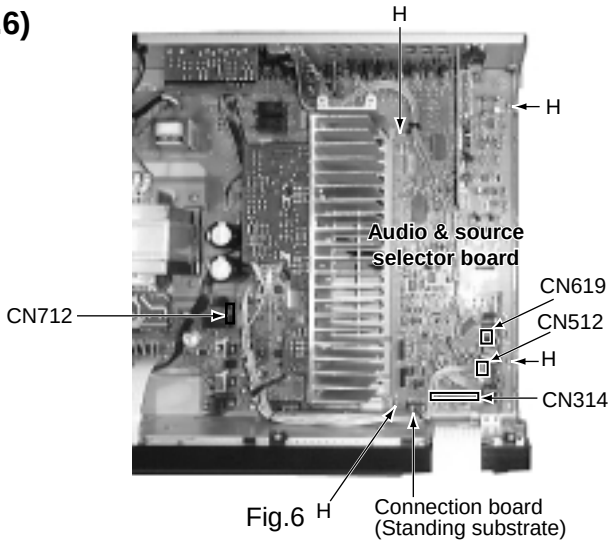


Fig.6

■ Removing the main board (See Fig.6 to 8)

1. Remove the rear panel and front panel assembly.
2. Pull out the pre AMP board and connection board.
3. Remove 8 screws "I" on the main board.
4. Remove 8 screws "J" on the power transistor.
5. Disconnect the connector CN511 and wire CN831 on the main board.
6. Each tie band is cut out.
7. Remove 2 screws "K" on push switch of the front side.
8. Remove nut on terminal of the headphone.
9. The solder of the wire connected with the transformer is removed.
10. Remove the main board.

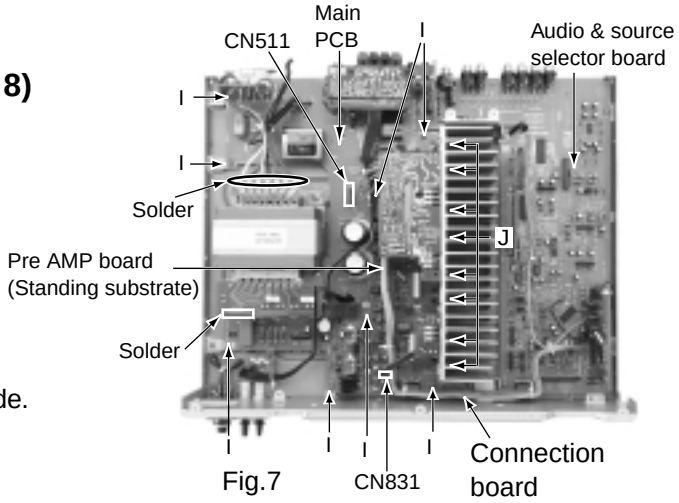


Fig.7

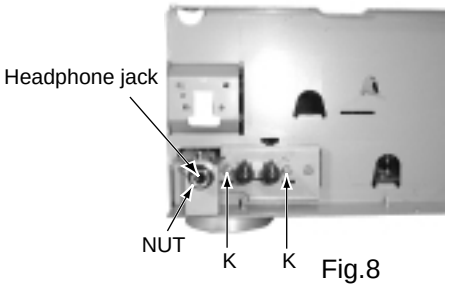


Fig.8

■ Removing the front board (See Fig.9)

1. Remove the top cover.
2. Remove the Front panel assembly.
3. Remove the master volume knob and nut.
4. Remove the 13 screws "L" on the Front board.

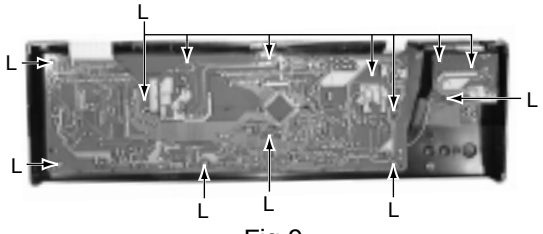


Fig.9

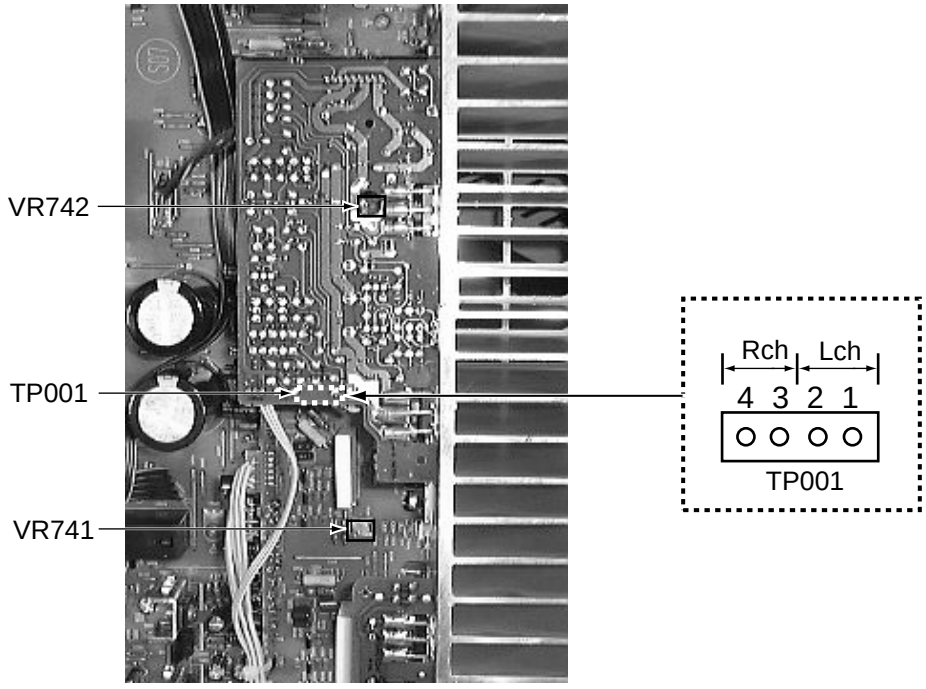
Adjustment method

■ TUNER SECTION

1.Tuner range

FM	87.5MHz~108.0MHz
AM(MW)	530kHz~1710kHz

■ POWER AMPLIFIER SECTION



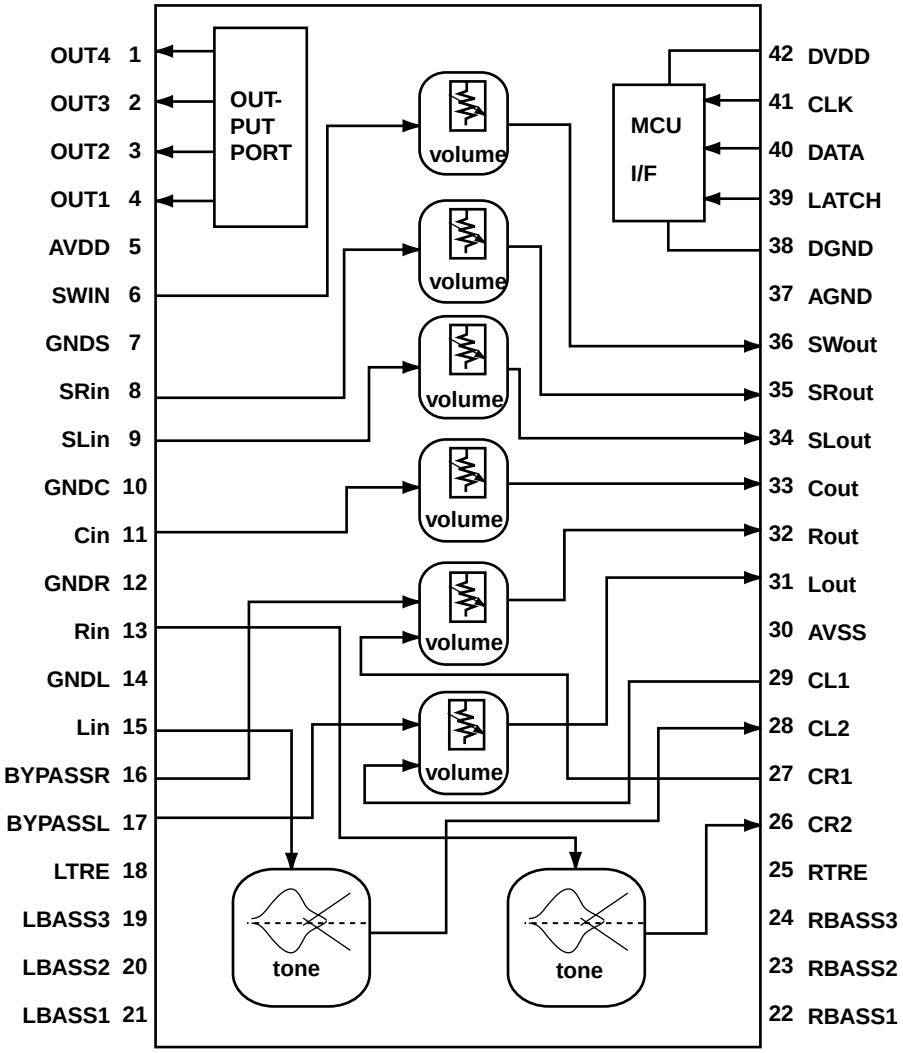
IDLING CURRENT

1.Set the volume control to minimum during this adjustment.
2.Set the surround mode OFF.
2.Turn VR741 and VR742 fully counterclockwise to warm up before adjustment.
If the heat sink is already warm from previous use the correct adjustment can not be made.
3.For L-ch,connect a DC voltmeter between TP001's pin1 and pin2 (Lch)
And,connect it between pin3 and pin4(Rch).
4.30 minutes later after power on, adjust VR741 for L-ch, or VR742 for R-ch so that the DC voltmeter value has 1mV~10mV.

Description of major ICs

■ M62446FP(IC341) : 6CH Master volume

1.Block Diagram

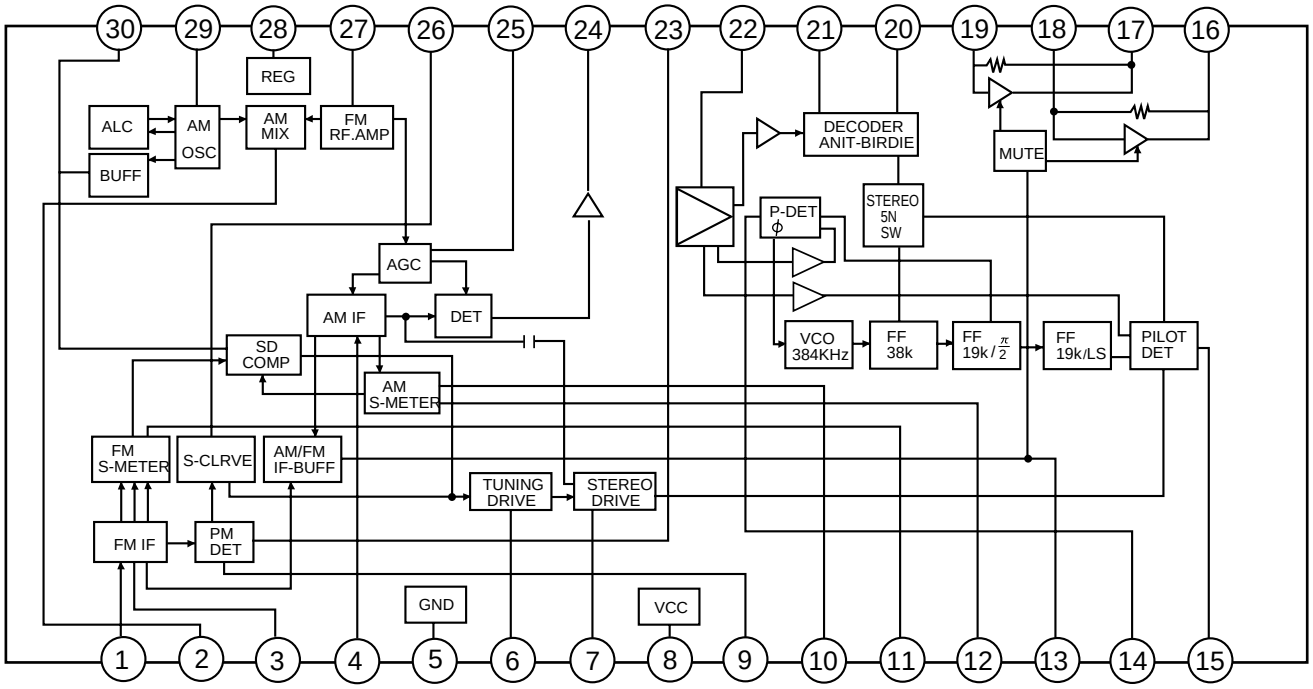


2.Pin Function

Pin No.	Symbol	I/O	Descriptions
1	SURROUND	O	SURROUND control terminal
2	BASS BOOST	O	BASS BOOST control terminal
3	INPUT-ATT	O	Input attenuator control terminal
4	MUTING	O	MUTING control terminal
5	AVDD	-	Analog positive power supply terminal
6	SWIN	I	SUB Woofer volume signal input terminal
7	A.GND	-	Analog ground terminal
8	RR IN	I	R ch volume signal input terminal for rear speaker
9	RL IN	I	L ch volume signal input terminal for rear speaker
10	A.GND	-	Analog ground terminal
11	C IN	I	Center volume signal input terminal
12	A.GND	-	Analog ground terminal
13	R IN	I	R ch volume signal input terminal
14	A.GND	-	Analog ground terminal
15	L IN	I	L ch volume signal input terminal
16,17		-	Non connect
18		-	Frequency adjustment terminal tone/treble
19~21		-	Frequency adjustment terminal tone/bass
22		O	Tone output terminal
23,24		-	Frequency adjustment terminal tone/bass
25		-	Frequency adjustment terminal tone/treble
26		-	Frequency adjustment terminal tone/bass
27		I	L/R volume input terminal
28		O	Tone output terminal
29		I	L/R volume input terminal
30	AVSS	-	Analog negative power supply terminal
31	L OUT	O	L ch output
32	R OUT	O	R ch output
33	C OUT	O	Center volume signal output terminal
34	RL OUT	O	L ch volume signal output terminal for rear speaker
35	RR OUT	O	R ch volume signal output terminal for rear speaker
36	SW OUT	O	SUB Woofer volume signal output terminal
37	A.GND	-	Analog ground terminal
38	D.GND	-	Digital ground terminal
39	VOL STB	I	Latch input terminal
40	VOL DATA	I	Volume data input terminal
41	VOL CLK	I	Clock input terminal for data transfer
42	DVDD	-	Digital power supply terminal

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

1. Block Diagram

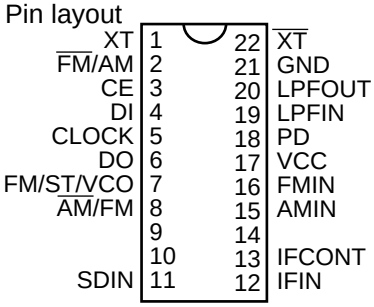


2. Pin Function

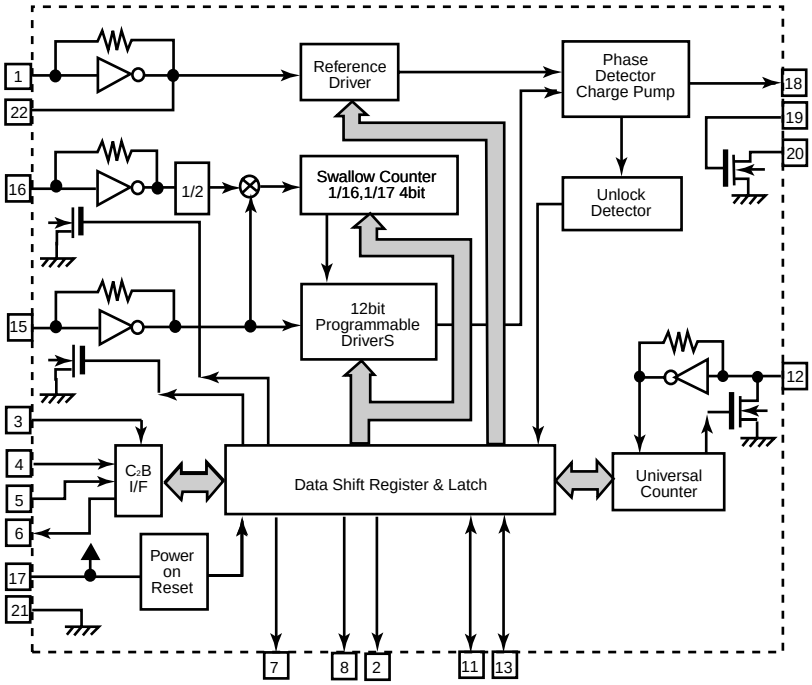
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	FM IN	I	This is an input terminal of FM IF signal.	16	R OUT	O	Right channel signal output.
2	AM MIX	O	This is an out put terminal for AM mixer.	17	L OUT	O	Left channel signal output.
3	FM IF	I	Bypass of FM IF	18	R IN	I	Input terminal of the Right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

■ LC72136N (IC121) : PLL Frequency Synthesizer

1. Pin layout



2. Block diagram



3. Pin function

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	XT	I	X'tal oscillator connect (75kHz)	12	IFIN	I	IF counter signal input
2	$\overline{FM}$/AM	O	LOW:FM mode	13	IFCONT	O	IF signal output
3	CE	I	When data output/input for 4pin(input) and 6pin(output): H	14		-	Not use
4	DI	I	Input for receive the serial data from controller	15	AMIN	I	AM Local OSC signal output
5	CLOCK	I	Sync signal input use	16	FMIN	I	FM Local OSC signal input
6	DO	O	Data output for Controller Output port	17	VCC	-	Power suplly(VDD=4.5-5.5V) When power ON:Reset circuit move
7	FM/ST/VCO	O	"Low": MW mode	18	PD	O	PLL charge pump output(H: Local OSC frequency Height than Reference frequency. L: Low Agreement: Height impedance)
8	$\overline{AM}$/FM	O	Open state after the power on reset	19	LPFIN	I	Input for active lowpassfilter of PLL
9	LW	I/O	Input/output port	20	LPFOUT	O	Output for active lowpassfilter of PLL
10	MW	I/O	Input/output port	21	GND	-	Connected to GND
11	SDIN	I/O	Data input/output	22	$\overline{XT}$	I	X'tal oscillator(75KHz)

■ MN173222BA(IC401) : System controller

1.Key Matrix

	KEY OUT 0	KEY OUT1	KEY OUT 2	KEY OUT 3	KEY OUT 4
KEY IN 0	POWER	SURROUND	DVD MULTI	◄	CD
KEY IN 1	ADJUST	ONE TOUCH OPERATION	DVD	►	PHONE
KEY IN 2	SETTING	INPUT ATT	VCR	▲	TAPE/MD
KEY IN 3	MEMORY	————	FM	▼	AM

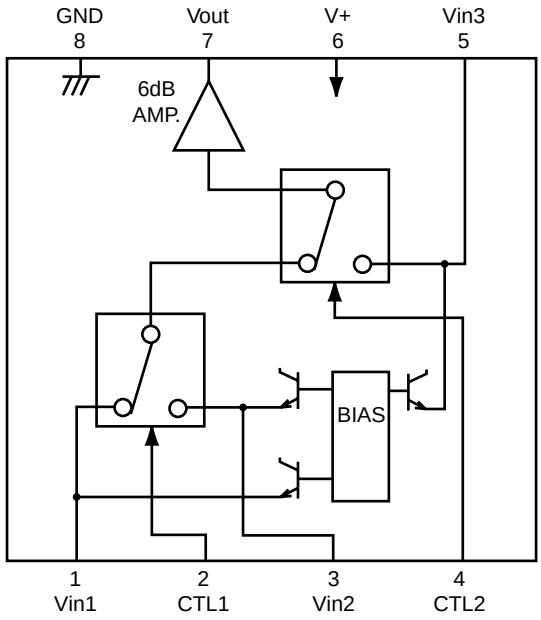
2.Pin Function (1/2)

Pin No.	Symbol	I/O	Function
1,2	IN1,2	I	Volume jog signal input
3,4	VIDEO1,2	O	Video signal switch output
5	PROTECT	I	Protect signal input of speaker
6	POWER	O	Power ON output
7~10	KI0~3	I	Key matrix signal input
11	VCR /S/C	-	Not used
12~21	G11~G2	O	FL grid signal output
22	G1/KO7	O	FL grid signal output / Key matrix signal output
23	VPP	-	Power supply
24~39	S1~16	O	FL segment control signal output
40	B.BOOST LED	O	Bass boost indicator control
41	CLK.D	O	Clock signal output to DSP
42	DATAIN.D	I	Data signal input from DSP
43	DATAOUT.D	O	Data signal output to DSP
44	INH	I	Inhibit detection signal input
45	RDS CLK	I	Clock signal input from RDS
46	RDS DATA	I	Data input from RDS
47	SW DATA	O	Function switch data signal output
48	REMOCON IN	I	Remote control signal input
49	RDS D.ST	I	Data start signal for block data to output serial data
50	STEREO	I	Stereo indicator output. Stereo "L" Mono "H"
51	TUNED	I	When the set is tuning, this terminal becomes "L"
52	CE.PLL	O	Chip enable output to IC121
53	CK.PLL	I/O	Clock signal for IC121
54	SW.CLK	O	Function switch clock signal output
55	DO.PLL	I/O	Tuner PLL data
56	DCS IN	I	Compulink signal input
57	DCS OUT	O	Compulink signal output
58	ERR.DSP	I	DSP control data input
59	IFOK.DSP	I	DSP control data input
60	ACK.DSP	I	DSP control data input
61	CD.DSP	O	DSP control data output
62	RELAY Sch	O	Rear ch relay control signal output
63	T.MUTE	O	TUNER mute signal output
64	SUBWFMUTE	O	Sub woofer mute signal output

2.Pin Function (2/2)

Pin No.	Symbol	I/O	Function
65	TV OUT	-	Connect to GND
66	VCR OUT	-	Connect to GND
67	VCR IN	-	
68	RESET IN	I	Reset signal input
69	X1	-	Connect to GND
70	X2	-	Non connect
71	VSS	-	Connect to GND
72	OSC2	-	Oscillation terminal
73	OSC1	-	Oscillation terminal
74	VDD	-	Power supply
75	RELAY Cch	O	Center ch relay control signal output
76	RELAY L/R	O	Front ch relay control signal output
77	SURROUND	O	Surround ON/OFF control
78	INPUT ATT LED	O	INPUT ATT. Indicator control
79	ONE T. LED	O	ONE TOUCH OPERATION indicator control
80	STANDBY LED	O	STANDBY indicator control
81	STB-SW	O	Strobe signal output of function switch
82	VOLUME DATA	O	Data output to IC341
83	VOLUME CLK	O	Clock signal output to IC341
84	VOLUMESTB	O	Strobe signal output to IC341

■ NJM2246D(IC201):Video Switch

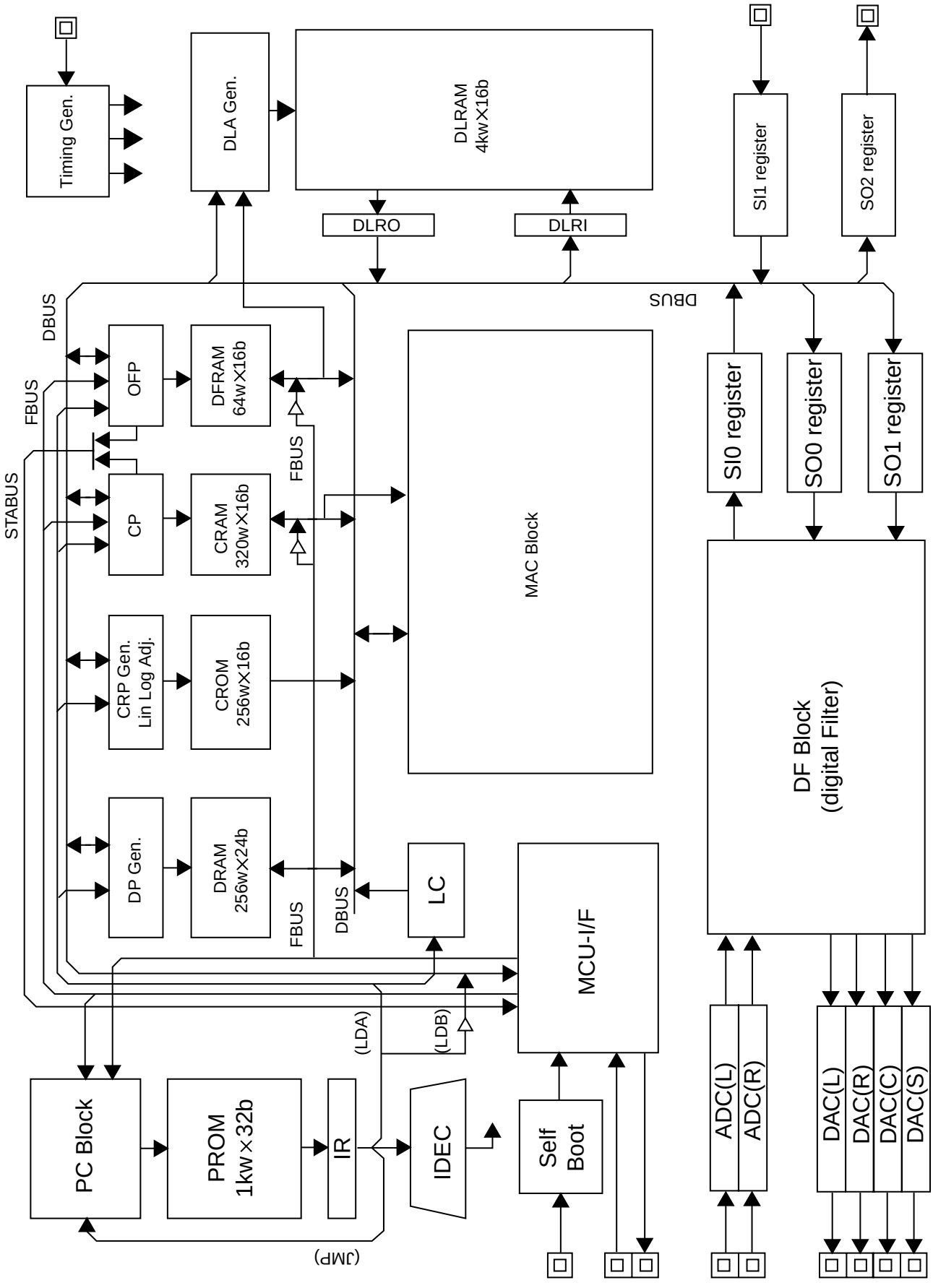


Control input - output signal

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

■ TC9471F(IC601) : Dolby prologic

1.Block Diagram



2.Pin Function (1/2)

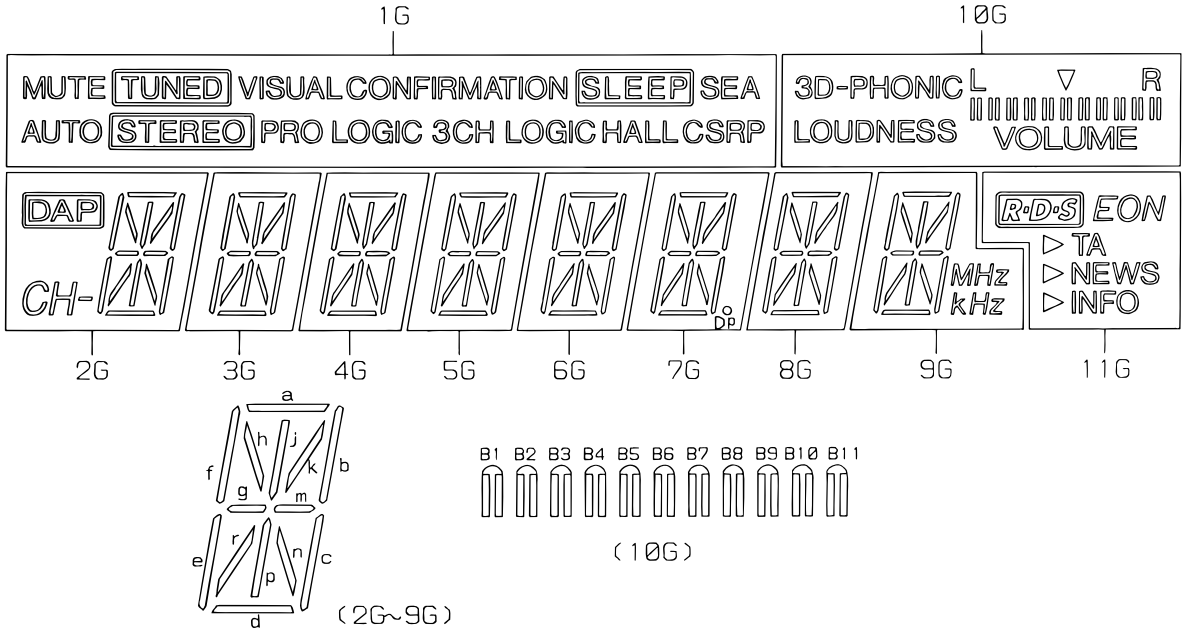
Pin No.	Symbol	I/O	Function
1	ECKO	-	Non connect
2	ECKI	I	Amplifier input terminal for external clock input.
3	A.GND	-	Ground terminal.(For crystal oscillator circuit)
4	A.GND	-	Ground terminal.(For DAC L channel)
5	LchOUT	O	DAC analog signal output terminal.(L channel)
6	V-REF1	-	Reference voltage terminal.(For DAC L channel)
7	A.5V	-	Power supply terminal.(For DAC L channel)
8	A.5V	-	Power supply terminal.(For DAC R channel)
9	V-REF2	-	Reference voltage terminal.(For DAC R channel)
10	RchOUT	O	DAC analog signal output terminal.(R channel)
11	A.GND	-	Ground terminal.(For DAC R channel)
12	A.GND	-	Ground terminal.(For DAC C channel)
13	N.C	O	DAC analog signal output terminal.(C channel)
14	CchOUT	O	DAC analog signal output terminal with attenuator.(For C channel)
15	V-REF3	-	Reference voltage terminal.(For DAC C channel)
16	A.5V	-	Power supply terminal.(For DAC C channel)
17	VRO	O	Reference voltage terminal for attenuator.(Output buffer)
18	VRI	I	Reference voltage terminal for attenuator.(Input buffer)
19	A.5V	-	Power supply terminal.(For DAC S channel)
20	V-REF4	-	Reference voltage terminal.(For DAC S channel)
21	SchOUT	O	DAC analog signal output terminal with attenuator.(For S channel)
22	NC	-	Non connect.
23	A.GND	-	Ground terminal.(For DAC S channel)
24	D.GND	-	Ground terminal.
25~29	NC	-	Non connect.
30	D.5V	-	Power supply terminal.
31	D.5V	-	Power supply terminal.(For DLRAM)
32	D.GND	-	Ground terminal.(For DLRAM)
33~43	NC	-	Non connect.
44	D.GND	-	Ground terminal.
45.46	NC	-	Non connect.
47	D.5V	-	Power supply terminal.
48~53	NC	-	Non connect.
54		-	Ground terminal.
55		-	Power supply.
56		-	Ground terminal.
57	RESET	I	Power supply.

2.Pin Function (2/2)

Pin No.	Symbol	I/O	Function
58	D.5V	-	Power supply terminal
59~71		-	Non connect.
72	DSP-CS	I	Chip select signal input terminal.(MCU interface)
73	DSP-CLK	I	Data sift clock input terminal.(MCU interface)
74	DATA-IN	I/O	Data input terminal.(MCU interface) At the IC bus mode,data input /output terminal.
75	DATA-OUT	O	Data output terminal.(MCU interface) At the IC bus mode,normally open.
76	DSP-IFOK	O	Operation flag output terminal.(MCU interface)
77	DSP-ACK	O	Acknowledge signal output terminal.(MCU interface)
78	DSP-ERR	O	Error flag output terminal.(MCU interface)
79	I2CS	I	IC bus mode select terminal.
80	BOOT	I	Self-boot control terminal.
81,82			Non connect.
83	D.5V	-	Power supply terminal.
84~87		-	Ground terminal.
88	D.GND	-	Digital ground terminal.(For ADC L channel)
89	A.GND	-	Analog ground terminal.(For ADC L channel)
90	LchIN	I	ADC analog signal input terminal.(L channel)
91	V-REF5	-	Reference voltage terminal.(For ADC L channel)
92,93	A.5V	-	Analog power supply terminal.
94	V-REF6	-	Reference voltage terminal.(For ADC R channel)
95	RchIN	-	ADC analog signal input terminal.(R channel)
96,97	A.GND	-	Analog ground terminal.(For ADC R channel)
98	XI	I	Crystal oscillator connection terminal.(input)
99	XO	O	Crystal oscillator connection terminal.(output)
100	A.5V	-	Power supply terminal.(For crystal oscillator circuit)

Internal connections for FL display tube

■ QLF0002-001(DI401):FL DISPLAY TUBE



ANODE CONNECTION

	1G	2G	3G~6G	7G	8G	9G	10G	11G
P1	MUTE AUTO	a	a	a	a	a	B1	R·D·S
P2	TUNED	b	b	b	b	b	B2	EON
P3	STEREO	j	j	j	j	j	B3	▷ TA
P4	VISUAL CONFIRMATION	k	k	k	k	k	B4	▷ NEWS
P5	SLEEP	h	h	h	h	h	B5	▷ INFO
P6	CSRP	f	f	f	f	f	B6	–
P7	–	m	m	m	m	m	B7	–
P8	–	g	g	g	g	g	B8	–
P9	HALL	c	c	c	c	c	B9	–
P10	3CH LOGIC	n	n	n	n	n	B10	–
P11	–	r	r	r	r	r	B11	–
P12	–	p	p	p	p	p	LOUDNESS	–
P13	PRO LOGIC	e	e	e	e	e	VOLUME	–
P14	–	d	d	d	d	d	L R	–
P15	SEA	CH-	–	Dp	–	MHz	3D-PHONIC	–
P16	–	DAP	–	–	–	kHz	▽	–

PIN CONNECTION

PIN NO.	39	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F2	F2	NP	NP	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NC	NC	NC	NC	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	NP	NP	F1	F1

NOTE 1) F1,F2 --- Filament
2) NP ------ No Pin
3) NC ------ No connection
4) DL ------ Datum Line
5) 1G~11G --- Grid

JVC

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