

COMPACT SYSTEM

AV-1

SERVICE MANUAL

AV-1 is composed of TCD-AV1, SW-AV1 and NX-AV1.

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100598

YAMAHA

YAMAHA CORPORATION
P.O.Box1, Hamamatsu, Japan

2.95K-797 (C) Printed in Japan '97.8

■ TO SERVICE PERSONNEL

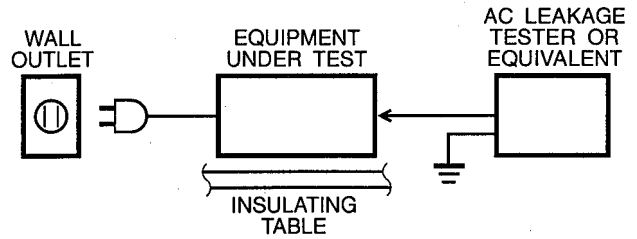
1. Critical Components Information.

Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.

2. Leakage Current Measurement (For 120V Models Only).

When service has been completed, it is imperative to verify that all exposed conductive surfaces are properly insulated from supply circuits.

- Meter impedance should be equivalent to 1500 ohm shunted by 0.15 μ F.



- Leakage current must not exceed 0.5mA.
- Be sure to test for leakage with the AC plug in both polarities.



“CAUTION”

“F1 : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 4.0A, 125V FUSE.”
 “F2, 3 : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 1.25A, 125V FUSE.”

CAUTION

F1 : REPLACE WITH SAME TYPE 4.0A, 125V FUSE.
 F2, 3 : REPLACE WITH SAME TYPE 1.25A, 125V FUSE.

ATTENTION

F1 : UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE DE 4.0A, 125V.
 F2, 3 : UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE DE 1.25A, 125V.

CAUTION : USE OF CONTROLS OR ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

THE COMPACT DISC PLAYER SHOULD NOT BE ADJUSTED OR REPAIRED BY ANYONE EXCEPT PROPERLY QUALIFIED SERVICE PERSONNEL.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to carefully follow the instructions below when servicing .

1. Laser Diode Properties

- Material : GaAlAs
- Wavelength : 780 nm
- Emission Duration : Continuous
- Laser Output : max. 44.6 μ W*

* This output is the value measured at a distance of about 200 mm from the objective lens surface on the Optical Pick-up Block.

2. When checking the laser diode emission, keep your eyes more than 30 cm away from the objective lens.

WARNING: CHEMICAL CONTENT NOTICE!

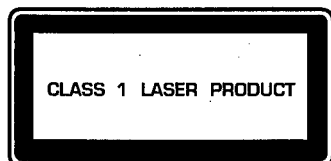
The solder used in the production of this product contains LEAD. In addition, other electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT PLACE SOLDER, ELECTRICAL/ELECTRONIC OR PLASTIC COMPONENTS IN YOUR MOUTH FOR ANY REASON WHATSOEVER!

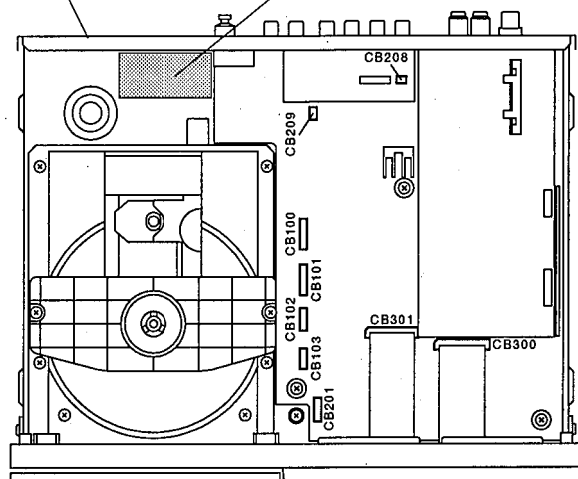
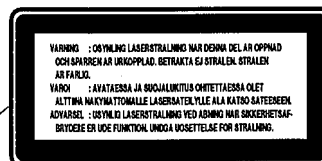
Avoid prolonged, unprotected contact between solder and your skin! When soldering, do not inhale solder fumes or expose eyes to solder/flux vapor!

If you come in contact with solder or components located inside the enclosure of this product, wash your hands before handling food.

①



② B, G, R, T models



English

- ① THIS PRINTING (SEE POSITION SHOWN IN THE ILLUSTRATION) INFORMS THE USER THAT THE APPARATUS CONTAINS A LASER COMPONENT.
- ② THIS LABEL (SEE POSITION SHOWN IN THE ILLUSTRATION) WARNS THAT ANY FURTHER PROCEDURE WILL BRING THE USER INTO EXPOSURE WITH THE LASER BEAM.

CAUTION : USE OF CONTROLS, ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN, MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

Swedish

- ① DENNA MÄRKNING (SE FIGUR) UPPLYSER OM ATT DET I APPARATEN INGÅR EN LASERKOMPONENT AV TYP KLASSE 1.
- ② VARNINGSMÄRKNING (SE FIGUR) FÖR STRÅLNING. INGREPP I APPARATEN BÖR ENDAST FÖRETAGAS AV FACKMAN MED KÄNNEDOM OM LASER. APPARATEN INNEHÅLLER EN LASERKOMPONENT SOM AVGER STRÅLNING ÖVERSTIGANDE GRÄNSEN FÖR LASERKLASS 1.

VARNING : OSYNLIG LASERSTRÅLING NÄR DENNA DEL ÄR ÖPPNAD: BETRÄKTA EJ STRÅLEN.

Danish

- ① DETTE MÆRKAT ER ANBRAGT SOM VIST I ILLUSTRATIONEN FOR AT ADVARE BRUGEREN OM AT APPARATET INDEHOLDER EN LASERKOMPONENT.
- ② DETTE MÆRKAT OM LASEREN ER ANBRAGT PÅ APPARATET SOM EN OPLYSNING OM AT APPARATET INDEHOLDER ET LASERKOMPONENT.

ADVARSEL : INDGREG BOR KUN FORETAGES AF EN FAGMAND DA DER ER RISIKO FOR RADIOAKTIV STRÅLING.

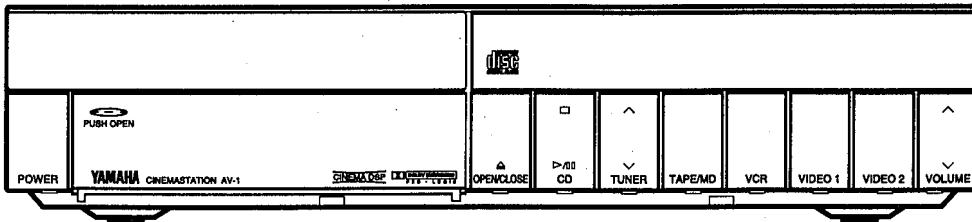
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING.
UNDGÅ UDSAETTELSE FOR STRÅLING.

Finnish

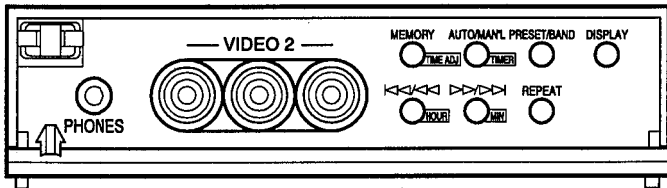
VARO!
AVATTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.

FRONT PANELS

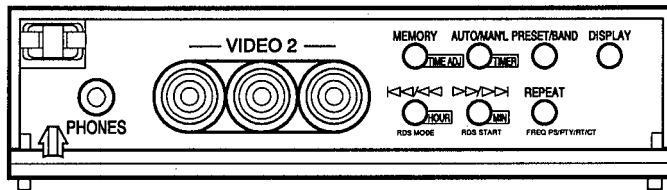
▼ TCD-AV1



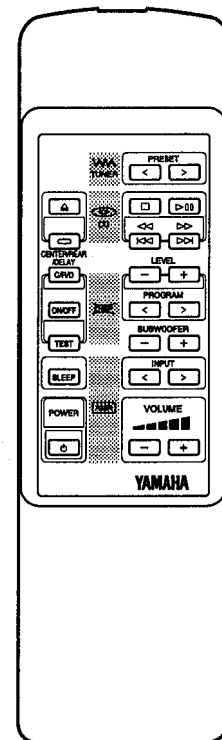
U, C, A, L, R, T models



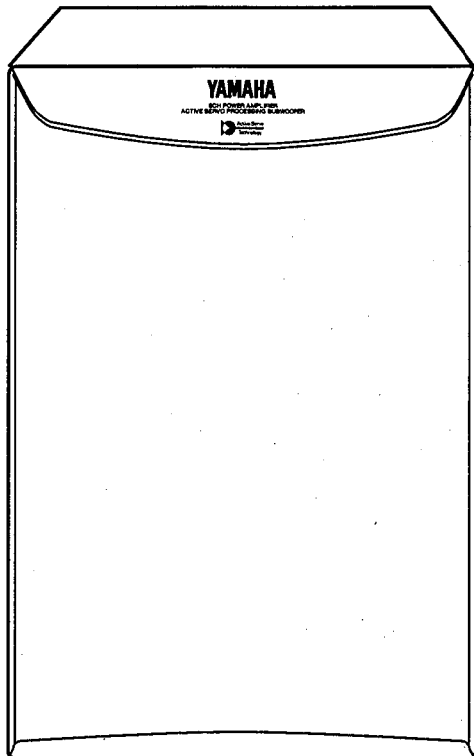
B, G models



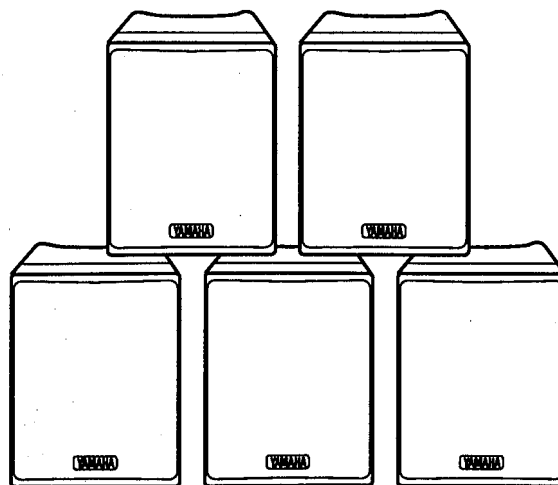
● Remote control transmitter



▼ SW-AV1



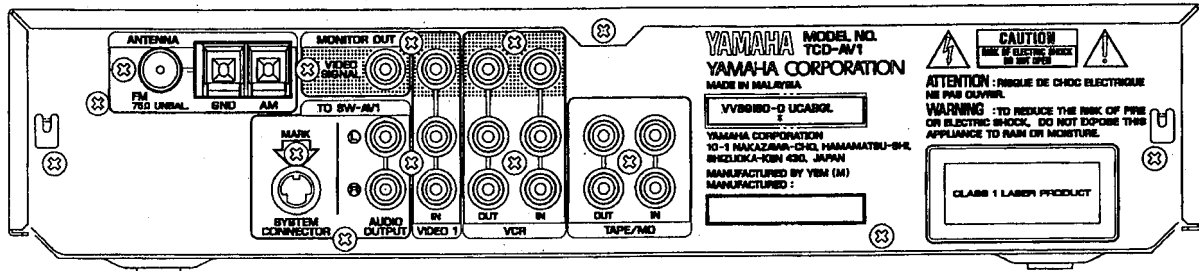
▼ NX-AV1



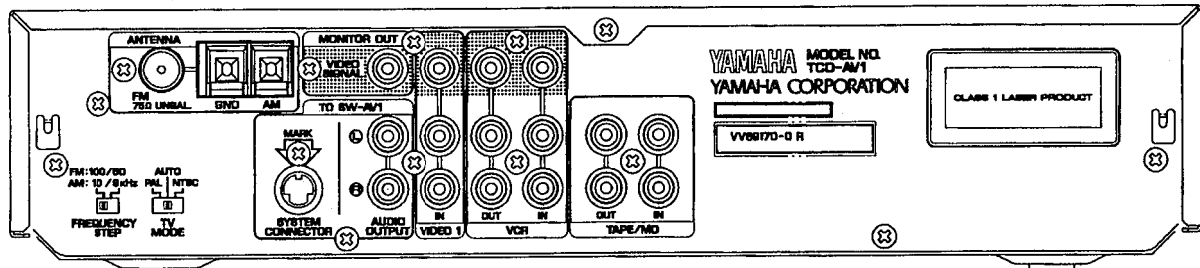
AV-1

REAR PANELS

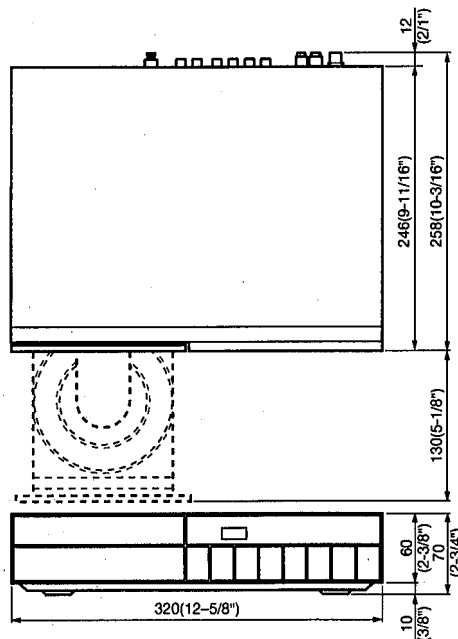
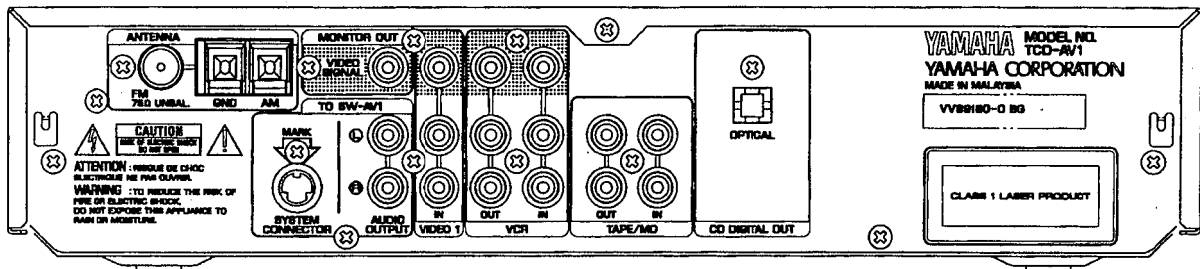
▼ TCD-AV1 U, C, A, L models



▼ R, T models

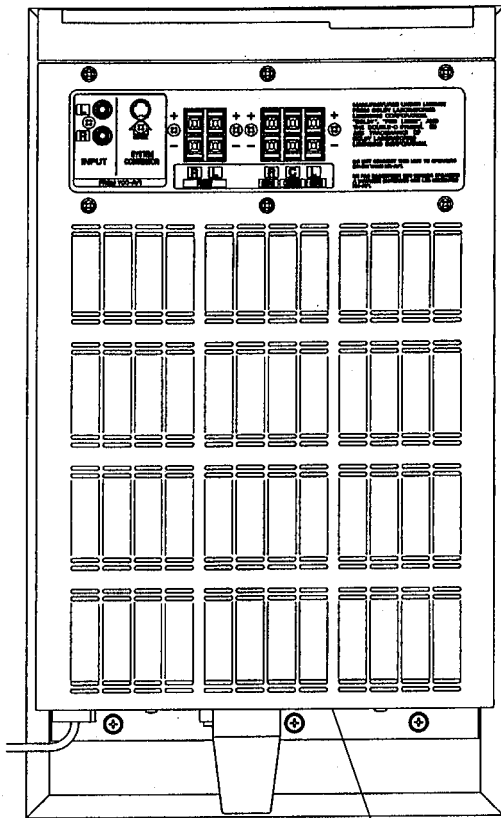


▼ TCD-AV1 B, G models

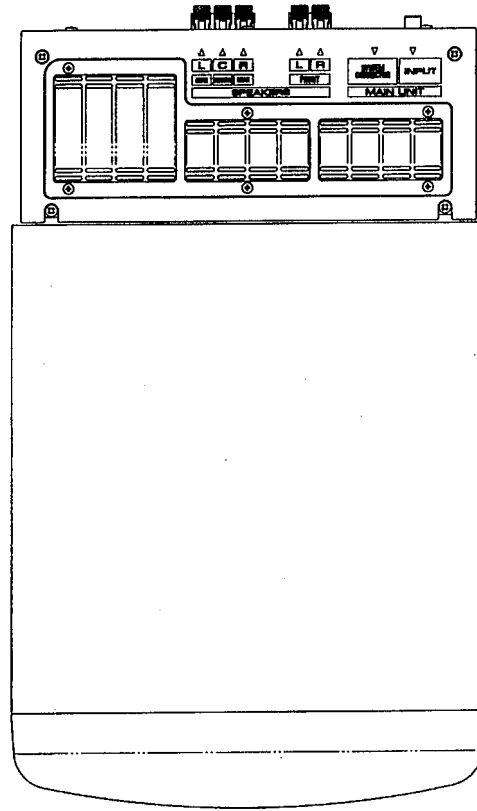


Unit : mm (inch)

▼ SW-AV1 Rear

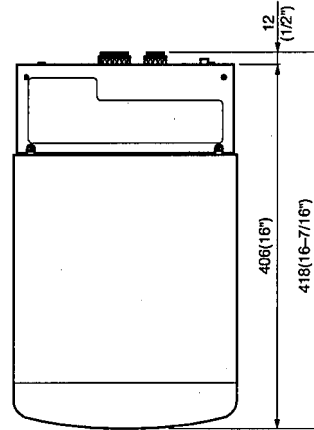
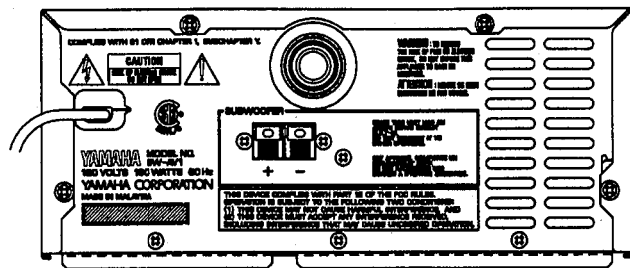


▼ SW-AV1 Top

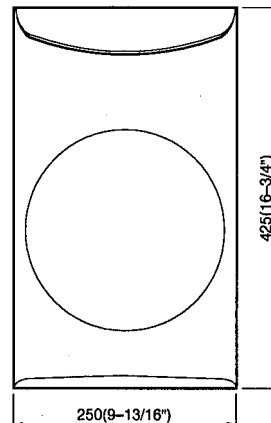
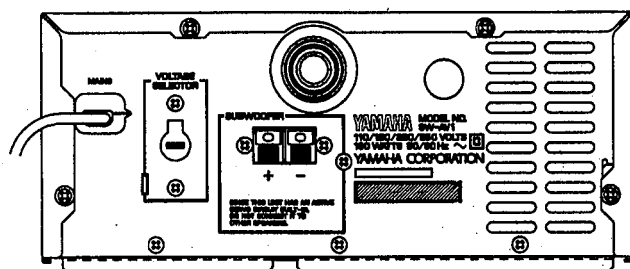


Bottom Panel

▼ SW-AV1 U, C models



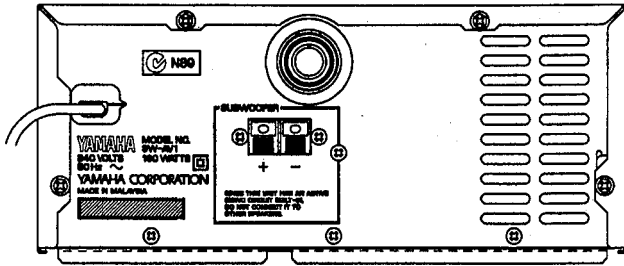
▼ SW-AV1 R, T models



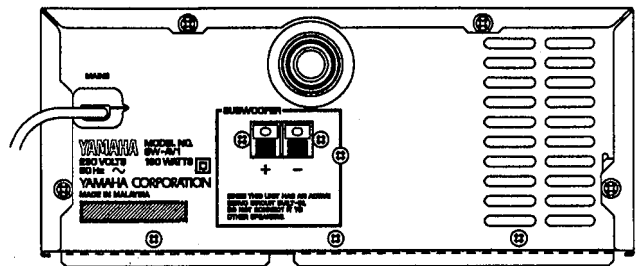
Unit : mm (inch)

AV-1

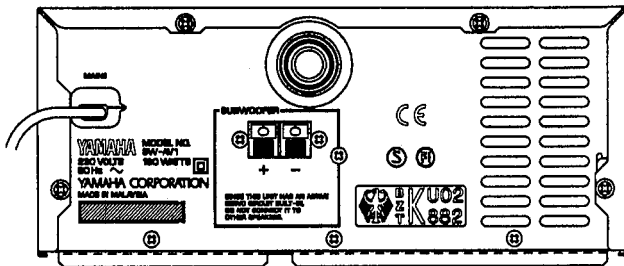
▼ SW-AV1 A model



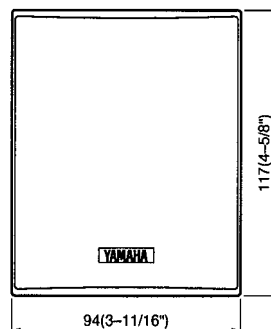
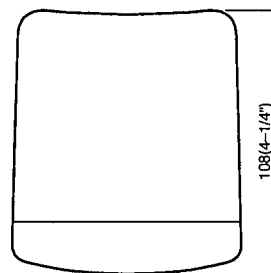
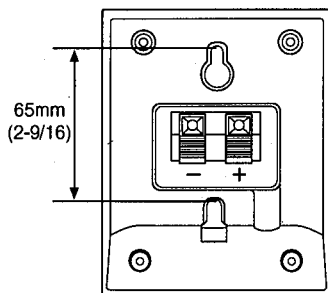
▼ SW-AV1 L model



▼ SW-AV1 B, G models



▼ NX-AV1



Unit : mm (inch)

■ SPECIFICATIONS

■ AMPLIFIER SECTION

Signal to Noise Ratio (IHF-A-Network, AUX, Shorted)	
TAPE/MD	85dB
Headphone Output Impedance	68Ω
Total Harmonic Distortion (1kHz)	
TAPE/MD to Speaker Out, 12.5W/6Ω	0.08%
Minimum RMS Output Power per Channel	
Front (1kHz, 10% THD, 6Ω)	30W
Center (1kHz, 10% THD, 6Ω)	30W
Rear (1kHz, 10% THD, 6Ω)	30W
Sub Woofer (100Hz, 10% THD, 4Ω)	50W
DIN Standard Output Power per Channel (G only)	
1kHz, 1% THD, 6Ω	25W
IEC Power (G only)	
1kHz, 0.1% THD, 6Ω	20W
Input Sensitivity/Impedance	
AUX	120mV/20kΩ

■ VIDEO SECTION

Signal Level	1Vp-p/75Ω
Maximum Input Level	1.5Vp-p
Signal to Noise Ratio	50dB
Monitor Out Frequency Response	5Hz to 10MHz -3dB

■ FM SECTION

Tuning Range	
U, C models	87.5 to 107.9MHz
R, T models	87.5 to 108.0MHz/87.50 to 108.00MHz
A, B, G, L models	87.50 to 108.00MHz
Usable Sensitivity (75Ω)	
30dB S/N Quieting, Mono, 1kHz,	
100% mod. R, U, C, L, T models	1.5μV (14.8dBf)
DIN Mono, S/N 26dB (A, B, G only)	1.8μV

■ AM SECTION

Tuning Range	
U, C models	530 to 1,710kHz
R, T models	530 to 1,710kHz/531 to 1,611kHz
A, B, G, L models	531 to 1,611kHz
Usable Sensitivity	280μV/m

■ LW SECTION (B, G only)

Tuning Range	153 to 288kHz
Usable Sensitivity	560μV/m

■ CD SECTION

Type	Single CD Player
Signal Readout	Non-contact,
	3-beam semi-conductor laser pick-up
D/A Converter	1bit DAC
Filter	8-time oversampling digital filter
Wow & Flutter	Unmeasurable

■ NX-AV1 SPEAKER SECTION

Type	1-way 1 speaker closed cabinet type (Magnetic-Shielding Type)
Speakers	8cm (3-1/8") cone
Maximum Power Handling Capacity	30W(13.5V)
Impedance	6Ω


■ SW-AV1 SPEAKER SECTION (Sub woofer)

Type	1-way 1 speaker YST-style bass reflex type (Magnetic-Shielding Type)
Speakers	20cm (7-7/8") cone
Maximum Power Handling Capacity	50W(14.2V)
Impedance	4Ω

■ GENERAL

Power Supply	
U, C models	AC120V, 60Hz
A model	AC240V, 50Hz
B, G, L models	AC230V, 50Hz
R, T models	AC110/120/220/240V, 60/50Hz
Power Consumption	160W
Dimensions (W X H X D)	
TCD-AV1	320 X 70 X 258mm (12-5/8" X 2-3/4" X 10-3/16")
SW-AV1	250 X 425 X 418mm (13-13/16" X 16-3/4" X 16-7/16")
NX-AV1	94 X 117 X 108mm (3-11/16" X 4-5/8" X 4-1/4")
Weight	
TCD-AV1	14.5kg (31 lbs. 15 oz)
SW-AV1	2.6kg (5 lbs. 11 oz)/each
NX-AV1	0.7kg (1 lbs. 8 oz)
Accessories	AM loop antenna X 1 Indoor FM antenna X 1 System cord (DIN plug) X 1 Pin cord (RCA) X 1 Remote Control Transmitter X 1 Battery (size "AA", R06) X 2 Speaker Stand (front/center) X 3 Speaker Bracket (rear) X 2 Speaker Bracket X 5 Screw Ass'y X 1 Speaker Cord (15m) X 2 Speaker Cord (6m) X 3

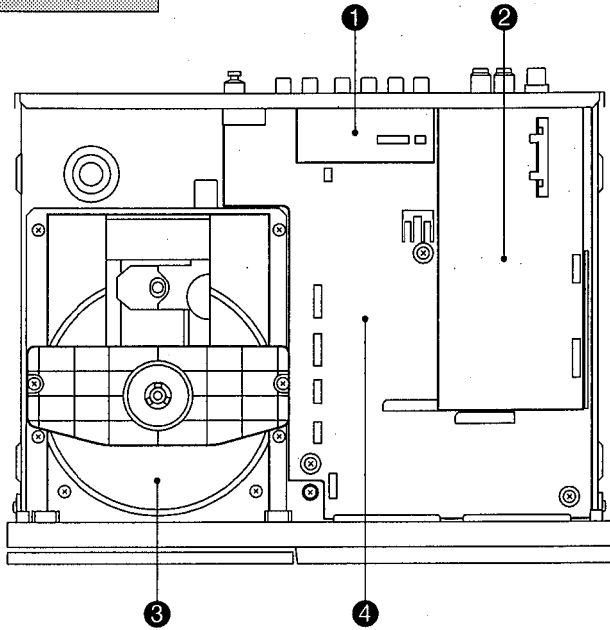
* Specifications subject to change without notice.

* Manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY", "PRO LOGIC", and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

U	U.S.A. model	G	European model
C	Canadian model	R	General model
A	Australian model	L	Singapore model
B	British model	T	China model

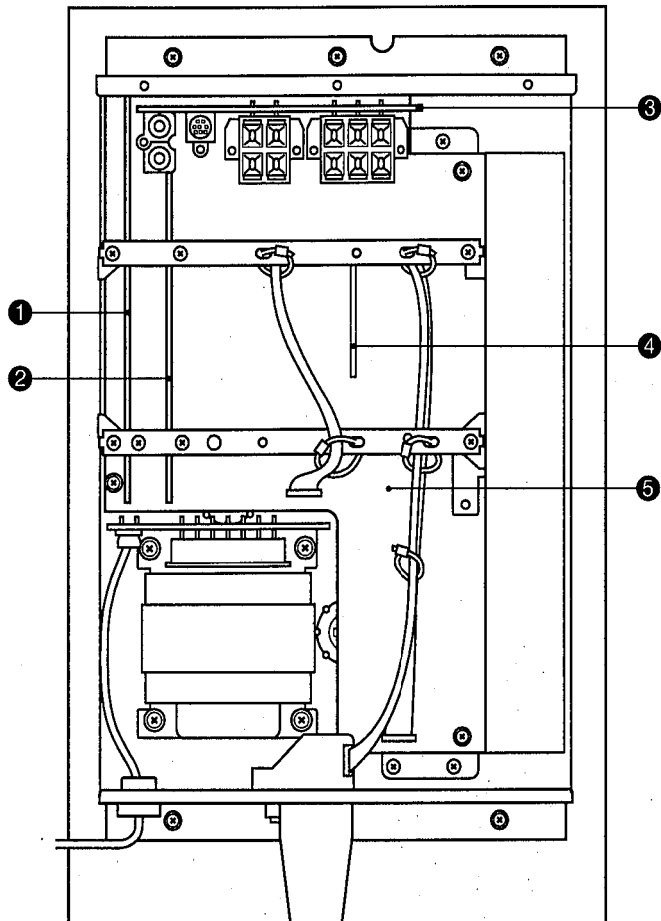
INTERNAL VIEW

TCD-AV1



- ① P.C.B. MAIN (2)
- ② P.C.B. TUNER
- ③ CD MECHANISM UNIT
- ④ P.C.B. MAIN (1)

SW-AV1



- ① P.C.B. DSP
- ② P.C.B. VOLUME (2)
- ③ P.C.B. VOLUME (1)
- ④ P.C.B. AMP (2)
- ⑤ P.C.B. AMP (1)

■ TCD-AV1 DISASSEMBLY PROCEDURES (Remove parts in the order as numbered.)

1. Removal of Top Cover

- a. Remove 5 screws (①) and 3 screws (②) in Fig. 1.
- b. Lift the Top Cover at the rear and move it rear-ward slantingly.

2. Removal of Front Panel

- a. Press the OPEN/CLOSE key and open the tray. Then remove the Lid attached to the front edge of the tray in Fig. 2. Press the OPEN/CLOSE key and close the tray, then unplug the power cord.
- b. Remove 5 connectors in Fig. 2.
CB201, CB208, CB209, CB300, CB301
- c. Remove 5 screws (②) and then pull the Front Panel forward in Fig. 1.

3. Removal of CD Mechanism Unit

- a. Remove 4 connectors in Fig. 2.
CB100, CB101, CB102, CB103
- b. Remove 4 screws (③) in Fig. 1.

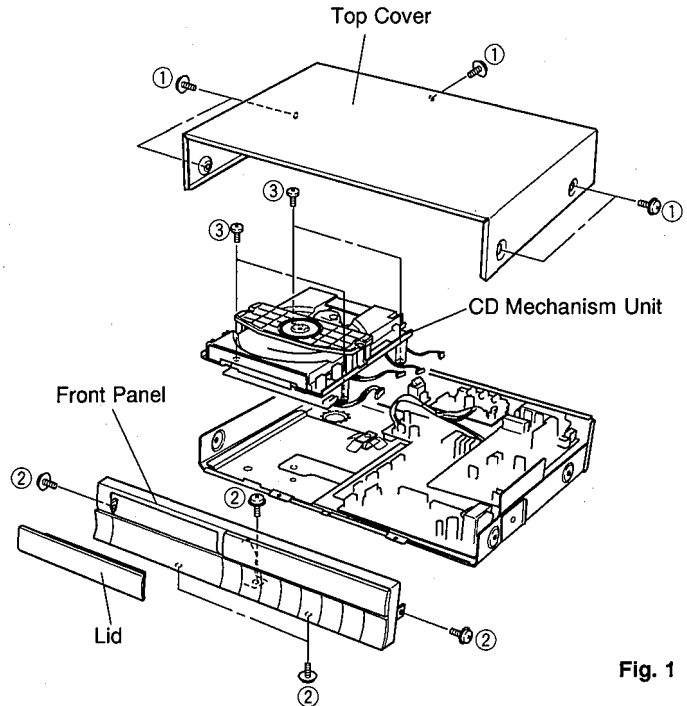


Fig. 1

4. Removal of Tray Unit

- a. Remove 2 screws (④) and then remove the Chucking Unit in Fig. 3.
- b. Remove 1 hook and then remove the Stopper Pin in Fig. 3.
- c. Rotate the Drive Gear and then open the Tray Unit in Fig. 3.
- d. Detach the Stoppers on both sides and then pull out the Tray in Fig. 3.

5. Removal of Pick-up Head

- a. Remove 2 screws (⑤) in Fig. 4.
- b. Remove 4 screws (⑥) and then remove the Drive Unit in Fig. 4.
- c. Remove the gear A in Fig. 5.
- d. Pull out the Sled Shaft in Fig. 5.
- e. Remove the Pick-up Head.

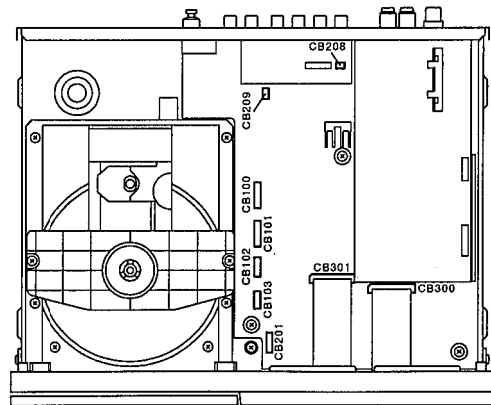


Fig. 2

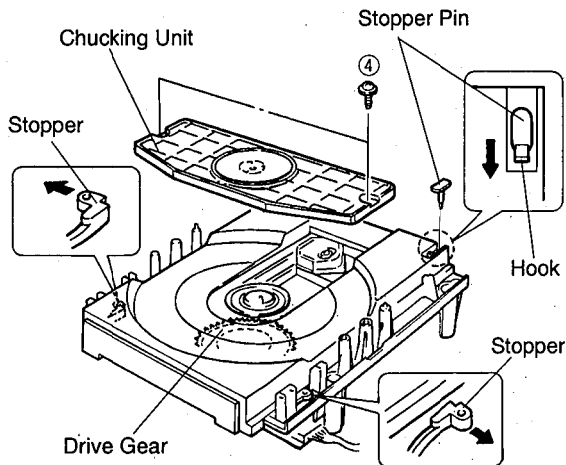


Fig. 3

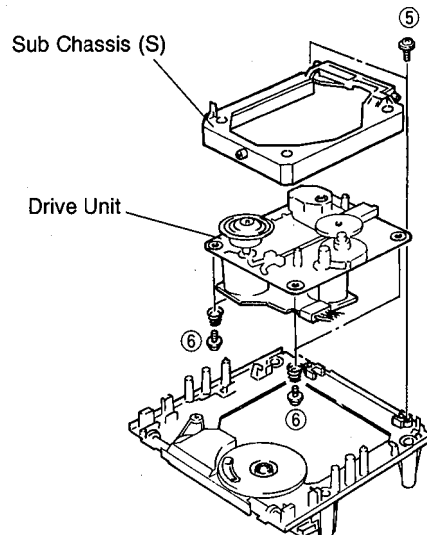


Fig. 4

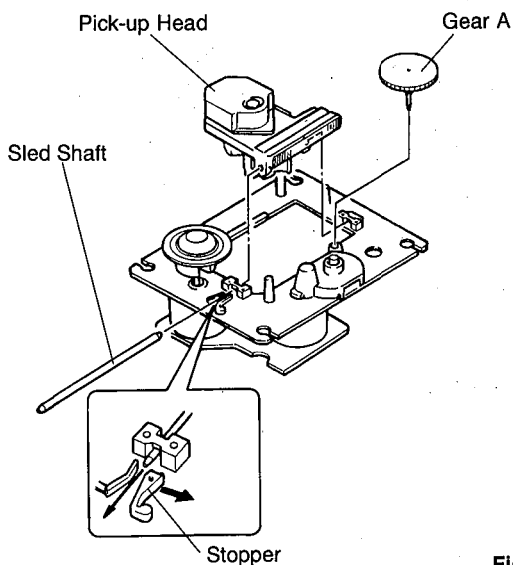
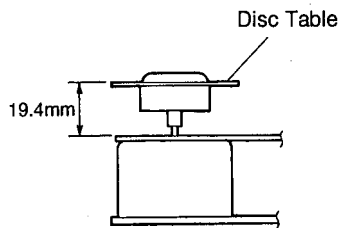


Fig. 5

Check that the disc table height is as specified below.



SW-AV1 DISASSEMBLY PROCEDURES (Remove parts in the order as numbered.)

1. Removal of Amp Unit

- a. Remove the speaker cord in Fig. 6.
- b. Remove 4 screws (7) and then remove the Grille Unit in Fig. 6.
- c. Remove 6 screws (8) and then remove the Amp Unit in Fig. 6.

2. Removal of Top Cover & Rear Panel

- a. Remove 18 screws (9) and then remove the Top Cover in Fig. 7.
- b. Remove 9 screws (10) and then remove the Rear Panel in Fig. 7.

3. Removal of Grille Ass'y & Top Panel

- a. Insert a flat tip screwdriver or the like as shown below and pry up the Grille Ass'y. (Start from the bottom side.) (Fig. 8)
- b. Repeat prying it up toward the top panel side till the Grille Ass'y and the Top Panel come off.

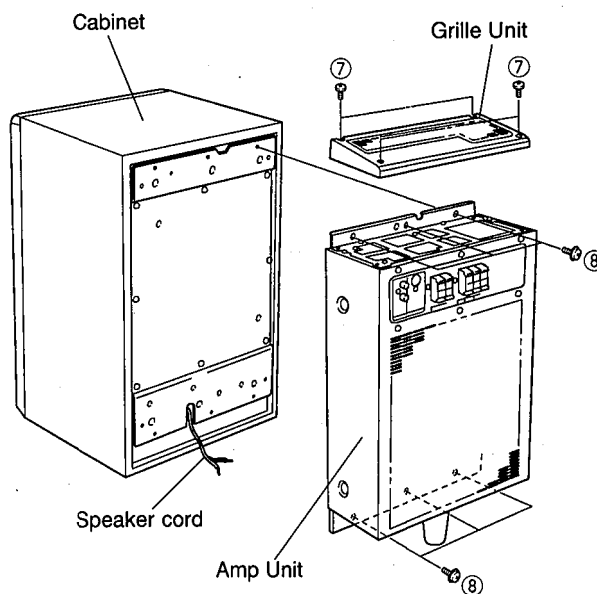


Fig. 6

The Grille Ass'y is fixed with dowels at 6 locations and the Top Panel at 3 locations. When removing them, use care not to cause damage to the main unit.

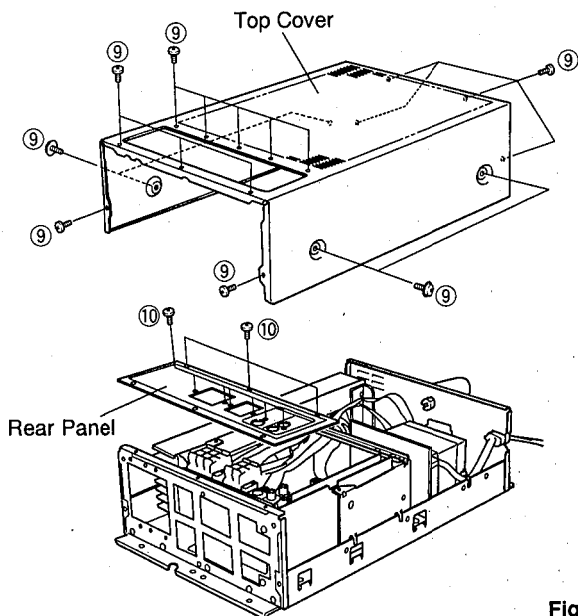


Fig. 7

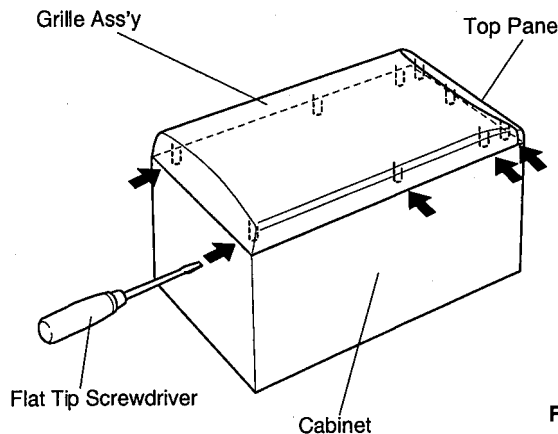


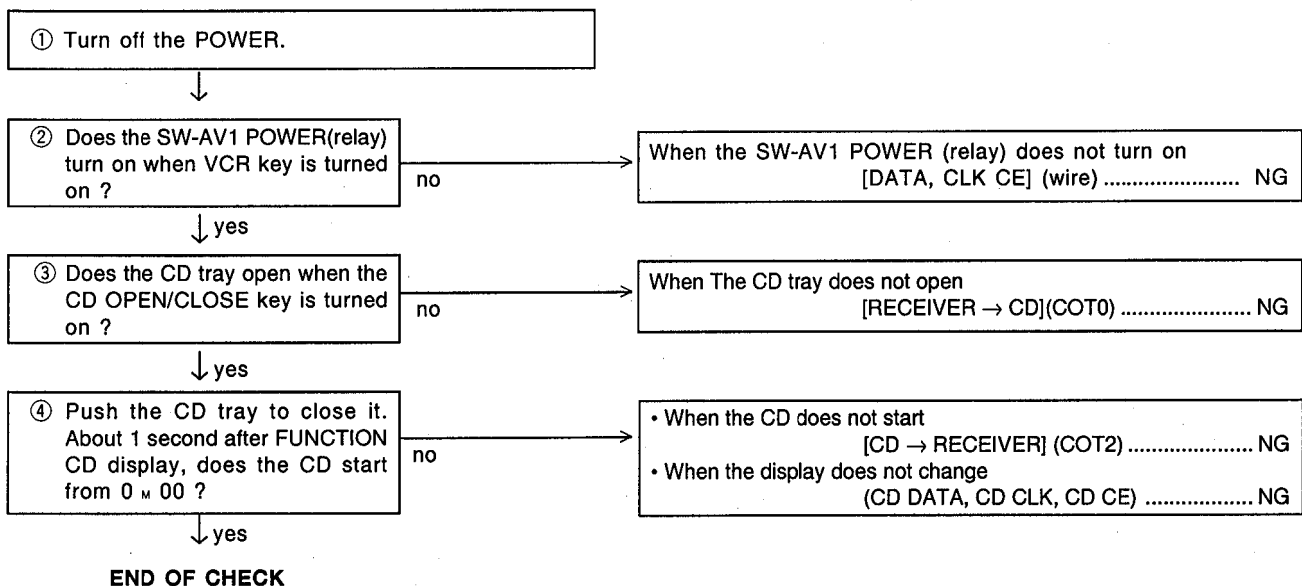
Fig. 8

■ VOLUME RANGE

DISPLAY	dB	DISPLAY	dB	DISPLAY	dB
VOL MIN	-∞	VOL 10	-55	VOL 56	-9
VOL 01	-79	VOL 11	-54	VOL 57	-8
VOL 02	-73	.	1dB step	VOL 58	-7
VOL 03	-68			VOL 59	-6
VOL 04	-64			VOL 60	-5
VOL 05	-61			VOL 61	-4
VOL 06	-59			VOL 62	-3
VOL 07	-58			VOL 63	-2
VOL 08	-57	VOL 54	-11	VOL 64	-1
VOL 09	-56	VOL 55	-10	VOL MAX	0

NOTE) When VOLUME is at minimum, MUTE of AMP becomes on.

■ SYSTEM CONTROL CHECK (to check communication between microprocessors)



■ TEST PROGRAM FUNCTION SELECT MODE

1. How to Start the Program

To set to the TEST PROGRAM FUNCTION SELECT mode, press the POWER key while pressing both VCR 2 and TAPE/MD keys simultaneously. Then, using the TUNER ^ (up) and TUNER v (down) keys, select the test program function No. and press the POWER key, and the selected function will be executed.

* Execute the test program mode repeatedly according to the test program function No.

2. Content (Function) of the Test Program

No. & DISPLAY	FUNCTION	PURPOSE & OPERATION
01 FAC , TEST	Setting of DSP self-diagnosis function	Used for checking the DSP operation & characteristics. (Refer to page 13 for more information.)

No. & DISPLAY	FUNCTION	PURPOSE & OPERATION
02 FL + CLEAR	FL display full lighting, RAM CLEAR	Used to turn OFF all FL lights and to clear memories of the tuner and EQ. (Note that memories set by the user will be erased.) When the power switch is pressed, all FL lights turn ON and when pressed again, CLEAR appears on display. Pressing the power switch with CLEAR on display will cause MEMORY and M-CLEAR to light for 2 seconds and the power to turn OFF. (CPU RAM is in the initialization state.) Also, the preset contents of the tuner are restored to the factory preset ones.
03 FL FULL	FL display full lighting	Used to check lighting of all FL lights. Pressing the power switch will turn ON all FL lights and pressing it again will turn OFF the power. (cancel)
04 APO - ON/OFF	Not used (Do not use this function as it is not for servicing.)	
05 RDS - OFF/ON		
06 A, PS - ON/OFF		
07 A, M, - RDS/ALL		
08 CT > C - ON/OFF		
09 L > CT - ON/OFF		
10 PSR2 - ON/OFF		
11 RTBL - ON/OFF		
12 RDS E / F		
13 AMPC - OFF/ON		
14 AM - IF		
15 SEC - OFF/ON		
16 CDCH - ON/OFF		
17 REM CODE		
18 E, VR -		
19 ALL CH >		
20 OSDV - OFF/ON		
21 VR80 - OFF/ON		
22 VR H - OFF/ON		
23 OT11 - OFF/ON		
24 CANCEL	Test program mode cancel	
25 DEST	Destination display mode	

● FACTORY PRESET

BAND	MARKETS	PRESET No.							
		1	2	3	4	5	6	7	8
FM (MHz)	U, C, R, T (100k/10k)	98.1	95.1	87.5	101.5	107.9	88.1	106.1	107.9
	A, B, G, R, L, T (50k/9k)	98.10	95.10	87.50	101.50	108.00	88.10	106.10	107.90
AM (kHz)	U, C, R, T (100k/10k)	630	1080	1400	530	1710	900	1350	1440
	A, B, G, R, L, T (50k/9k)	630	1080	1404	531	1611	900	1350	1440
LW (kHz)	B, G	270	171	225	153	288	180	207	252

NOTE 1) PRESET PAGE { B, G (with LW) A : FM B : MW C : LW D : FM E : MW
 { OTHERS (w.o. LW) A : FM B : AM C : FM D : AM E : FM

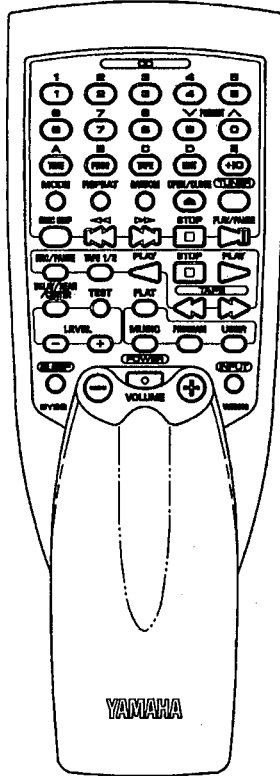
CAUTION : When executing Test program No. 2 RAM CLEAR, be sure to write down the preset memory contents of the tuner, using a table like the one shown below. Execution of RAM CLEAR will set the memory contents of the tuner back in the factory preset state which means that all the memories preset by the user will be erased.

Preset group	P1	P2	P3	P4	P5	P6	P7	P8
A								
B								
C								
D								
E								

■ DSP SELF-DIAGNOSIS FUNCTION (SELF)

This product has a self-diagnosis function (SELF) which facilitates DSP testing and measurement. To select the diagnosis menu of the DSP self-diagnosis function, a remote control unit (P/No. VU506200) of the GX-70 or an equivalent (GX-90/50, CC-90/75/70/50) is required. Note that the remote control of this product is not usable for that purpose.

GX-70 remote control (P/No. VU506200)



HOW TO START & CANCEL

1. Apply a signal to VIDEO1 and set INPUT to VIDEO 1.
2. Set the DSP mode to "DOLBY PRO LOGIC".

CAUTION:

Be sure to perform the above Steps 1 and 2 before starting the DSP self-diagnosis function. Starting it with the DSP mode set to any mode other than "DOLBY PRO LOGIC" will prevent the speaker from producing signals at the correct level when making diagnosis.

3. Set to the test program function select mode.
(Refer to TEST PROGRAM FUNCTION SELECT MODE on the previous page.)
4. Select **01 FAC, TEST** of the test program function items and press the POWER key. This sets to the DSP self-diagnosis mode (SELF), starting with the menu item of SELF 1.
 - All the DSP MODE display segments (frames and inside of frames) light up.
 - The function is set to VIDEO 1. (variable)
 - The main volume is set to 45 (-20dB). (variable)
 - The SUB WOOFER level is set to 0dB. (variable)
5. To select the diagnosis menu, press the corresponding number key (1 - 6) on the remote control for the GX-70.
6. To cancel the self-diagnosis mode, turn off the power. Then the mode setting will be back to the normal mode.

Select key	Diagnosis menu (mode)	Display (5 seconds)
1	RAM THROUGH A	SELF 1
2	RAM THROUGH B	SELF 2
3	RAM THROUGH C	SELF 3
4	DSP OFF	SELF 4
5	MANUAL TEST	SELF 5_L/C/R/S
6	DOLBY PRO LOGIC	SELF 6

Note 1) The center mode is the NORMAL mode.

Note 2) The electronic VR (CENTER/REAR) is variable by using the remote control of this product.

Note 3) The preset page direct (A, B, C, D, E) function of the tuner is available.

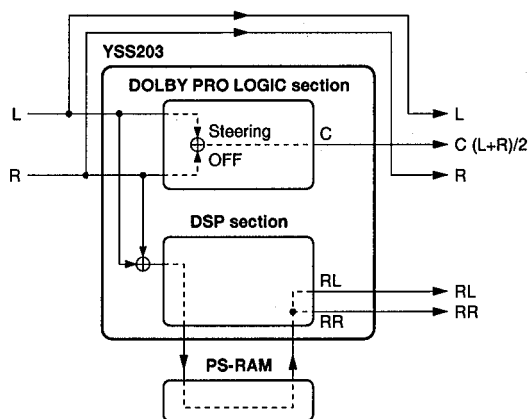
Note 4) Using the remote control (AV-1) of this product, the volume can be controlled directly. (Refer to the table below.)

Key	Volume Value	Level (dB)	Display
DSP ON/OFF	MAX	0	VOL MAX
PROGRAM >	45	- 20	VOL 45
PROGRAM <	25	- 40	VOL 25
DSP TEST	MIN	- ∞	VOL MIN

DETAILS OF SELF CONTENT

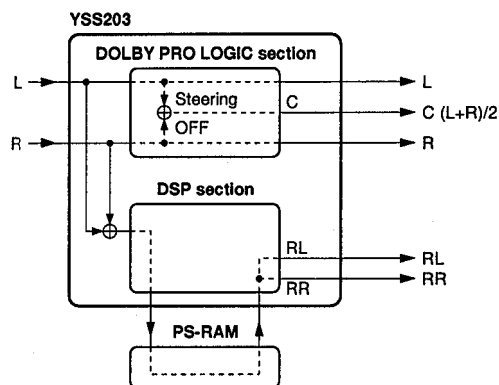
SELF 1 RAM THROUGH A

- MAIN L/R is output through the bypass.
- CENTER is output with the steering OFF and by $(L+R)/2$.
- RL/RR passes through the PS-RAM and is output through the DSP.
- The electronic volume (for CENTER/REAR) is 0dB.



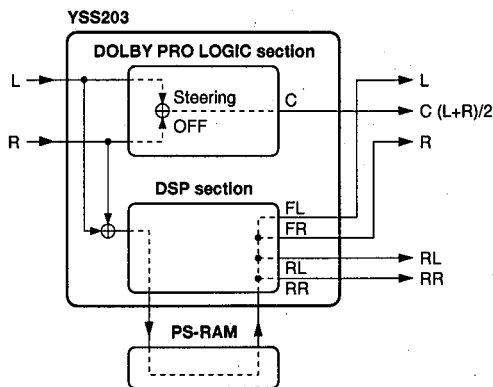
SELF 3 RAM THROUGH C

- L/R is output with the steering OFF.
- CENTER is output with the steering OFF and by $(L+R)/2$.
- RL/RR passes through the PS-RAM and is output through the DSP.
- The electronic volume (for CENTER/REAR) is +10dB.



SELF 2 RAM THROUGH B

- L/R and RL/RR pass through the PS-RAM and are output through the DSP.
- CENTER is output with the steering OFF and by $(L+R)/2$.
- The electronic volume (for CENTER/REAR) is -10dB.



SELF 4 DSP OFF

- EFFECT OFF.

SELF 5 MANUAL TEST

- Every time [5] key is pressed, the TEST TONE shifts in the order of L→C→R→S and is output.
- The electronic volume (for CENTER/REAR) is 0dB.


SELF 6 DOLBY PRO LOGIC

- The auto input balance which is ON in the normal mode is turned OFF.
- The electronic volume (for CENTER/REAR) is 0dB.

■ CD TEST MODE

To set to the CD test mode, a remote control (P/No. VU506200) of the GX-70 or an equivalent (GX-90/50, CC-90/75/70/50) is required. Note that the remote control of this product is not usable for that purpose.




How to Start and Operate the CD Test Mode

- 1) Press the CD  (Play/Pause) and AUTO/MAN'L keys simultaneously to set to the CD test mode.
- 2) When in the CD test mode, use the remote control of the GX-70 for operation. The remote control of this product is not usable for operation.
- 3) The M1, M2 and M3 modes are available as the CD test mode.

The functions vary depending on these modes as shown in the table below.

To select the desired mode, press the **EDIT** key to set to the mode setting state (M1, M2 and M3 indicators flash) and then set the mode by pressing the **4**, **5** or **6** key.

GX-70 Remote Control Keys and Functions

SW	MODE 1 (M1) 4	MODE 2 (M2) 5	MODE 3 (M3) 6
EDIT	Bring about mode setting		
OPEN/CLOSE	Open/close the tray		Rotate the disc motor
3			Retard the disc motor
<input type="checkbox"/> (STOP)	All stop. (Focus, spindle, feed, laser, tray, etc.)		
 (PLAY/PAUSE)	Play		Read and display the servo coefficient
	Feed forward (outer direction)	+10 track kick	
	Feed backward (inner direction)	-10 track kick	Tray port control (open/close)
4	Auto adjustment mode 1 *1 Tracking Offset, Focus Offset, Focus Gain	+1 track kick	Displayed servo coefficient address up
5	Auto adjustment mode 2 *1 Tracking Balance, Tracking Gain	-1 track kick	Displayed servo coefficient address down
6	Auto adjustment mode 3 *1 Focus Gain, Tracking Gain, Focus Balance	+30 track kick	Displayed servo coefficient increment
7	Enter normal operation (without mecha. INIT.)	-30 track kick	Displayed servo coefficient decrement
REPEAT	Focus search	Start TEST REPEAT (Do not use this function as it is not for servicing.)	
TIME	Enter normal operation	Focus on, Tracking off, Feed off	Send the displayed servo coefficient *2
TAPE	Line mute on/off		
0	Play (without PLL)		
1	Rotate the disc motor		
2	Retard the disc motor		

*1 "Adj-" lights in the adjustment and disappears at the end of the adjustment.

*2 CD does not auto adjustment in TEST REPEAT, if the servo coefficients are renewed by this operation.

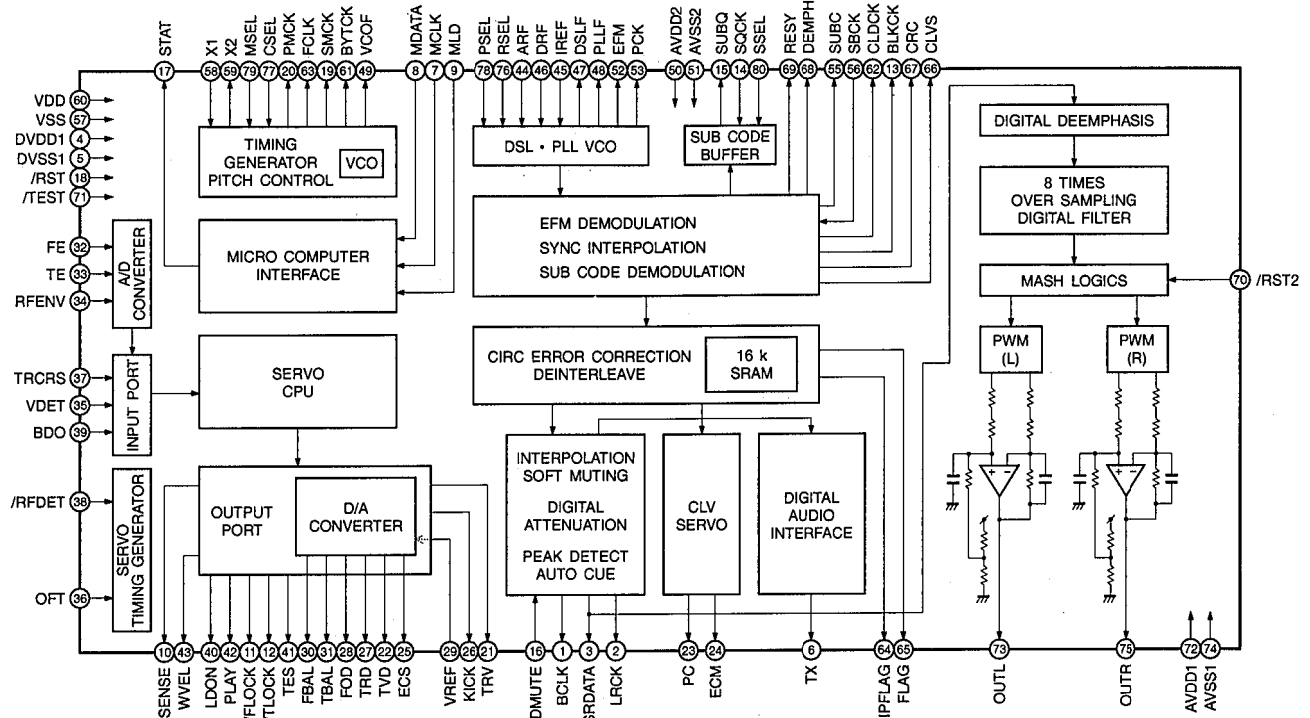
■ CD ERROR MESSAGE

Error message can be obtained on the display by pushing CD (stop) and AUTO/MAN'L switches simultaneously when CD has stopped (sometimes with the tray open) by an accident.

INDICATION	STATE	CONTENTS OF ERROR
E-10	PLAY) CD fails in the disc data reading after the state shift.
E-20	SCAN	
E-30	PAUSE	
E-70	SEARCH	
E-11	PLAY) CD fails in the disc data reading.
E-21	SCAN	
E-31	PAUSE	
E-73	SEARCH	CD fails in the TOC data reading.
E-04	LOAD, SEARCH	Tracking servo is not effective at the disc motor servo PLL.
E-14	LOAD, SEARCH	Disc motor servo PLL is not effective.
E-35		CD fails in focus search.
E-06	SEARCH, PLAY, PAUSE	CD fails in escaping from the lead-in area.
E-47	SEARCH) The inner limit switch does not operate at the feed inner control.
E-57	STOP	
E-77	LOAD, EJECT, CHANGE	
E-18	PLAY) CD fails in recovery from the focus out.
E-28	SCAN	
E-38	PAUSE	
E-48	SEARCH	
E-68	LOAD, DISC CHANGE	
E-AC		Close switch does not operate at the tray close control.
E-AD		Open switch does not operate at the tray open control.
MN ERR		MN66271 does not give response of SENSE with resetting by the units microcomputer.

TCD-AV1 IC DATA

IC102 : MN66271RA
Signal Processor & Controller



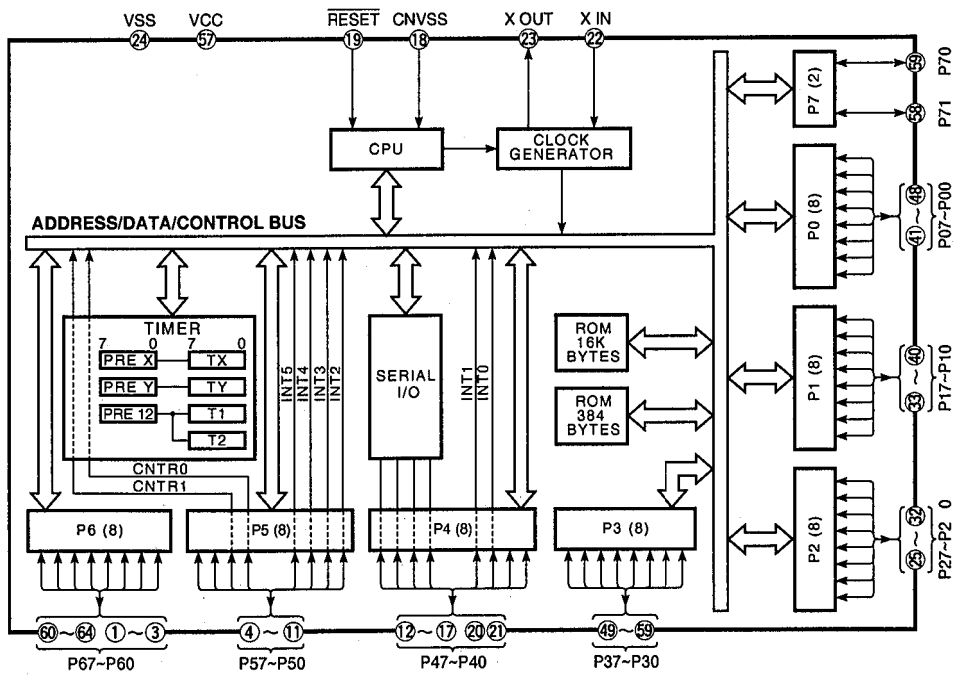
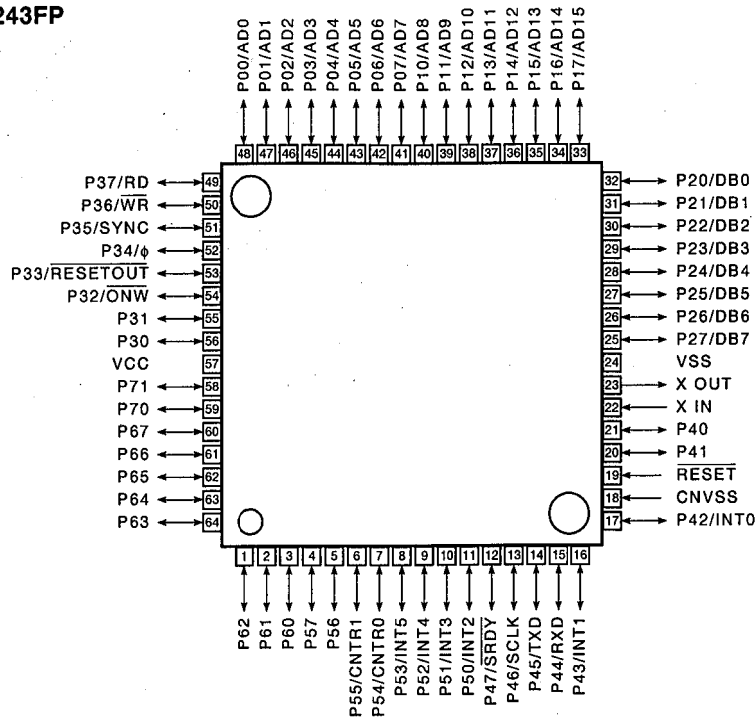
Pin No.	Name	I/O	Function
1	BCLK	O	Bit clock output for SR DATA (NC)
2	LRCK	O	L/R identification signal output (NC)
3	SRDATA	O	Serial data output (NC)
4	DVDD1	I	Power supply for digital circuit (+5)
5	DVSS1	I	GND for digital circuit
6	TX	O	Digital, audio, interface output signal (NC)
7	MCLK	I	Microprocessor command clock signal input (data latched at leading edge)
8	MDATA	I	Microprocessor command data input
9	MLD	I	Microprocessor command load signal input L : LOAD
10	SENSE	O	Sense signal output
11	FLOCK	O	Focus servo drawing signal (L : when drawn)
12	TLOCK	O	Tracking servo drawing signal (L : when drawn)
13	BLKCK	O	Sub code block clock signal
14	SQCK	I	Clock input for sub-code Q register
15	SUBQ	O	Sub-code Q code output
16	DMUTE	I	Muting input H : MUTE
17	STAT	O	Status signal
18	RST	I	Reset input L : RESET
19	SMCK	O	8.4672MHz clock signal output when MSEL = H 4.2336MHz clock signal output when MSEL = L (NC)
20	PMCK	O	88.2KHz clock signal output (NC)
21	TRV	O	Traverse (Feed) forced feed output
22	TVD	O	Traverse (Feed) drive output
23	PC	O	Spindle motor ON signal L : ON (NC)
24	ECM	O	Spindle motor drive signal (forced mode output) 3-State
25	ECS	O	Spindle motor drive signal (servo error signal output)

AV-1

IC102 : MN66271RA
Signal Processor & Controller

Pin No.	Name	I/O	Function
26	KICK	O	Kick pulse output
27	TRD	O	Tracking drive output
28	FOD	O	Focus drive output
29	VREF	I	Reference voltage for DA output block
30	FBAL	O	Focus balance adjustment output
31	TBAL	O	Tracking balance adjustment output
32	FE	I	Focus error signal input (analog input)
33	TE	I	Tracking error signal input (analog input)
34	RFENV	I	RF envelope signal input (analog input)
35	VDET	I	Oscillation detect signal input (H : DETECT)
36	OFT	I	Off track signal input (H : OFF TRACK)
37	TRCRS	I	Track cross signal input
38	RFDET	I	RF detect signal input (L : DETECT)
39	BDO	I	Drop out signal input (H : DROP OUT)
40	LDON	O	Laser ON signal output (H : ON)
41	TES	O	Tracking error shunt signal output (H : SHUNT)
42	PLAY	O	Play signal output (H : PLAY) (NC)
43	WVEL	O	Double speed status signal output (NC)
44	ARF	I	RF signal input
45	IREF	I	Reference current input terminal
46	DRF	I	Bias terminal for DSL (NC)
47	DSLIF	I/O	Loop filter terminal for DSL
48	PLLIF	I/O	Loop filter terminal for PLL
49	VCOF	I/O	Loop filter terminal for VCO (NC)
50	AVDD2	I	Power supply for analog circuit (for DSL, PLL, OA output blocks) (+5)
51	AVSS2	I	GND for analog circuit (for DSL, PLL, DA output blocks) (GND)
52	EFM	O	EFM signal output (NC)
53	PCK	O	PLL extract clock output (f PCK = 4.321MHz) (NC)
54	PDO	O	EFM signal to PCK signal phase comparison signal output (NC)
55	SUBC	O	Sub-code serial output data output (NC)
56	SBCK	I	Clock input for sub-code serial output (GND)
57	VSS	I	GND for oscillation circuit
58	X1	I	Crystal oscillation circuit input terminal (f = 16.9344MHz)
59	X2	O	Crystal oscillation circuit output terminal (f = 16.9344MHz)
60	VDD	I	Power supply for oscillation circuit (+5)
61	BYTCK	O	Byte clock output (NC)
62	CLDCK	O	Sub-code frame clock signal output (f CLDCK = 7.35kHz) (NC)
63	FCLK	O	Crystal frame clock output (f FCLK = 7.35kHz) (NC)
64	IPFLAG	O	Interpolation flag output H : INTERPOLATION (NC)
65	FLAG	O	Flag output (NC)
66	CLVS	O	Spindle servo phase synchronous status signal out H : CLV L : ROUGH SERVO (NC)
67	CRC	O	Sub-code CRC check result output H : OK , L : NG (NC)
68	DEMPH	O	Deemphasis detect signal output H : ON (NC)
69	RESY	O	Re-synchronous signal output of frame synchronization H : SYNCHRONOUS L : ASYNCHRONOUS (NC)
70	RST2	I	Reset terminal for stop after MASH circuit (L : RESET) (+5)
71	TEST	I	Test terminal (Normal : H) (+5)
72	AVDD1	I	Power supply for analog circuit (for audio output section (used for both L and R channels))
73	OUTL	O	L channel output
74	AVSS1	I	GND for analog circuit (for audio output section (used for both L and R channels))
75	OUTR	O	R channel output
76	RSEL	I	RF signal polarity specifying terminal RSEL = H when Bright level is at "H" RSEL = L when Bright level is at "L" (+5)
77	CSEL	I	Crystal oscillation frequency specifying terminal (Normal : L) (GND)
78	PSEL	I	Test terminal (Normal : L) (GND)
79	MSEL	I	SMCK terminal Output frequency switch terminal H : SMCK = 8.4672MHz , L : SMCK = 4.2336MHz (GND)
80	SSEL	I	SUBQ terminal Output mode switch terminal H : Q code buffer use mode (+5)

IC112 : M38024M6-243FP
8 bit μ -COM

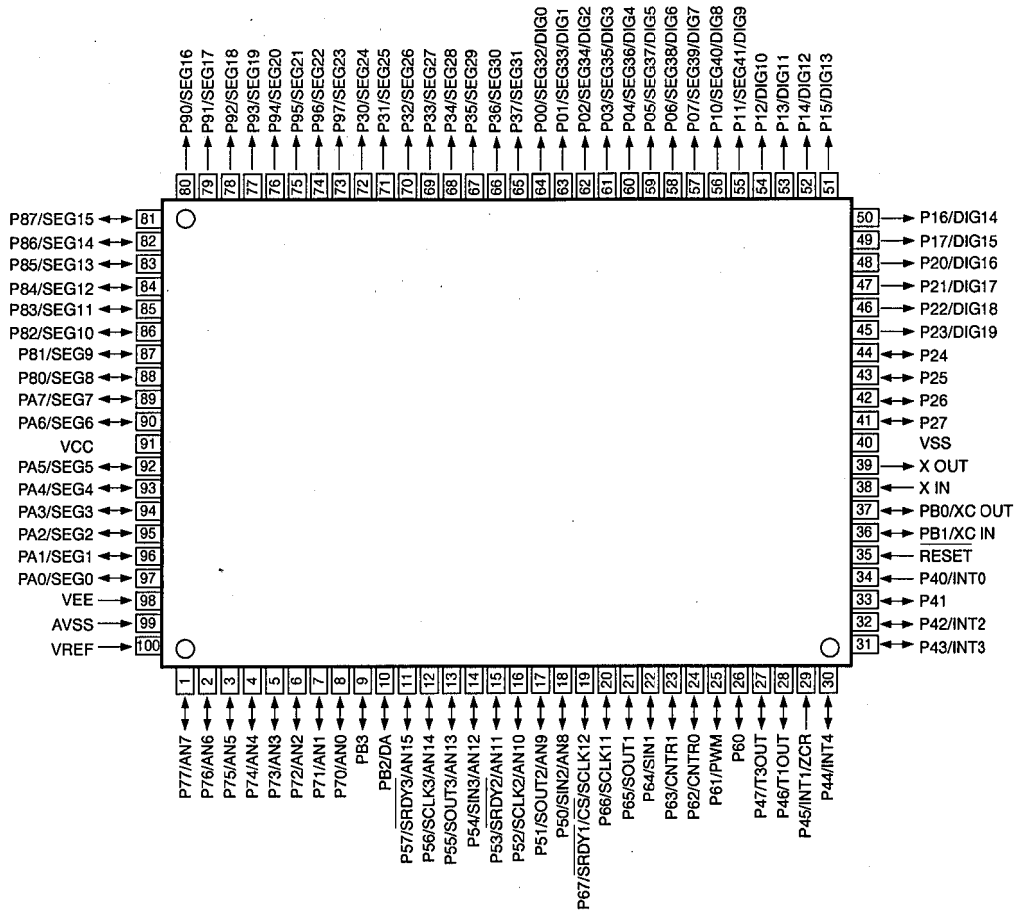


No.	Port	Name	I/O	Function
1	P62	(NC)		Not used (OPEN)
2	P61	(NC)		
3	P60	(NC)		
4	P57	/FLOCK	I	Focus servo lock
5	P56	/TLOCK	I	Tracking servo lock
6	P55	STAT	I	Servo status signal
7	P54	/MUTE	O	Line mute
8	P53	(NC)		Not used (OPEN)
9	P52	/SCK	O	Serial clock to MN66271

IC112 : M38024M6-243FP.
8 bit μ -COM

No.	Port	Name	I/O	Function
10	P51	SO	O	Serial out to MN66271
11	P50	SI	I	Serial in from MN66271
12	P47	DSTRT	O	Display data start signal
13	P46	/LSCK	O	Display data serial clock
14	P45	LSO	O	Display data serial out
15	P44	(NC)		Not used (OPEN)
16	P43	/MNRST	O	Reset signal to MN66271
17	P42	BLKCK	I	Q-code read OK signal
18	CNVss	CNVss		OPEN
19	RESET	RESET		RESET
20	P41	(NC)		Not used
21	P40	DAT0	I	System data in
22	XIN	XIN		4MHz IN (CLOCK)
23	XOUT	XOUT		4MHz OUT (CLOCK)
24	VSS	VSS		GND
25	P27	K3		Not used (GND)
26	P26	K2		
27	P25	K1		
28	P24	K0		
29	P23	KD3		Not used (OPEN)
30	P22	KD2		
31	P21	KD1		
32	P20	KD0		
33	P17	(NC)		Not used (OPEN)
34	P16	(NC)		
35	P15	(NC)		
36	P14	(NC)		
37	P13	(NC)		
38	P12	(NC)		
39	P11	(NC)		
40	P10	(NC)		
41	P07	TROP	O	Tray open control signal
42	P06	TRCL	O	Tray close control signal
43	P05	(NC)		Not used (OPEN)
44	P04	(NC)		
45	P03	(NC)		
46	P02	(NC)		
47	P01	(NC)		
48	P00	(NC)		
49	P37	/PON	O	MN66271 power control (L : ON)
50	P36	DAT2	O	System data out
51	P35	DMUTE	O	Digital mute
52	P34	/MLD	O	Microprocessor command store request
53	P33	/CMDSEL	I	SCK MCLK select
54	P32	/QSEL	I	SCK SQCK select
55	P31	(NC)		Not used (OPEN)
56	P30	(NC)		
57	Vcc	Vcc		+5V
58	Vref	Vref		AD, DA reference voltage (+5V)
59	AVss	AVss		GND
60	P67	/FLSW	I	Feed origin SW
61	P66	(NC)		Not used (OPEN)
62	P65	OPSW	I	Tray open SW
63	P64	/CLSW	I	Tray close SW
64	P63	/PMUTE	O	PU DRIVER MUTE (L : ON)

IC301 : M38197MA-176FP
8 bit μ-COM



No.	Port	Name	Function
1	AN7	CENTMODE	Center mode select NORM/PHANTM/WIDE (A-D)
2	AN6	TVMODE	Video out select NTSC/PAL/AUTO (A-D)
3	AN5	DSEL	Market select in (A-D)
4	AN4	IN	(External pull-down GND) (A-D)
5	AN3	IN	(External pull-down GND) (A-D)
6	AN2	KEY2	KEY 2 IN (A-D)
7	AN1	KEY1	KEY 1 IN (A-D)
8	AN0	KEY0	KEY 0 IN (A-D)
9	PB3	HPIN	H. P. detect in [1 : HP 0 : SP]
10	DA	IN	(External pull-down GND) (D-A)
11	AN15	IN	(External pull-down GND)
12	SCLK3	DSPCLKO	DSP CPU CLK OUT (Serial I/O3)
13	SOUT3	DSPDATAO	DSP CPU DATA OUT (Serial I/O3)
14	AN12	SCRNCSO	LC74781 CS OUT [0 : DATA transfer]
15	P53	TUMUTE	TUNER MUTE OUT [1 : MUTE ON]
16	SCLK2	SCLK0	LC72130/LC78211/LC74781 serial 2 CLK OUT (Serial I/O2)
17	SOUT2	SDATA0	LC72130/LC78211/LC74781 serial 2 DATA OUT (Serial I/O2)
18	SIN2	TUDIN	LC72130 DATA/STEREO/IF END IN (Serial I/O2)
19	P67	STIN	STATION IN (TUNER) [0 : Station available]
20	SCLK11	SDATAIN	CD display/RDS DATA CLK IN (Serial I/O1)
21	P65	DATAO	CD/RDS DATA select out [0 : CD 1 : RDS]
22	SIN1	SDATAIN	CD display/RDS DATA IN (Serial I/O1)
23	P63	CDDIN	CD DATA IN (System communication COT2)
24	P62	CDDO	CD DATA OUT (6 bit) (System communication COT0)
25	P61	CDCEO	LC72130/LC78211 CE OUT [1 : DATA transfer]
26	P60	DSPCEO	DSP CPU CE OUT [0 : DATA transfer]
27	P47	AMPMUTE	AMP MUTE OUT [0 : MUTE]

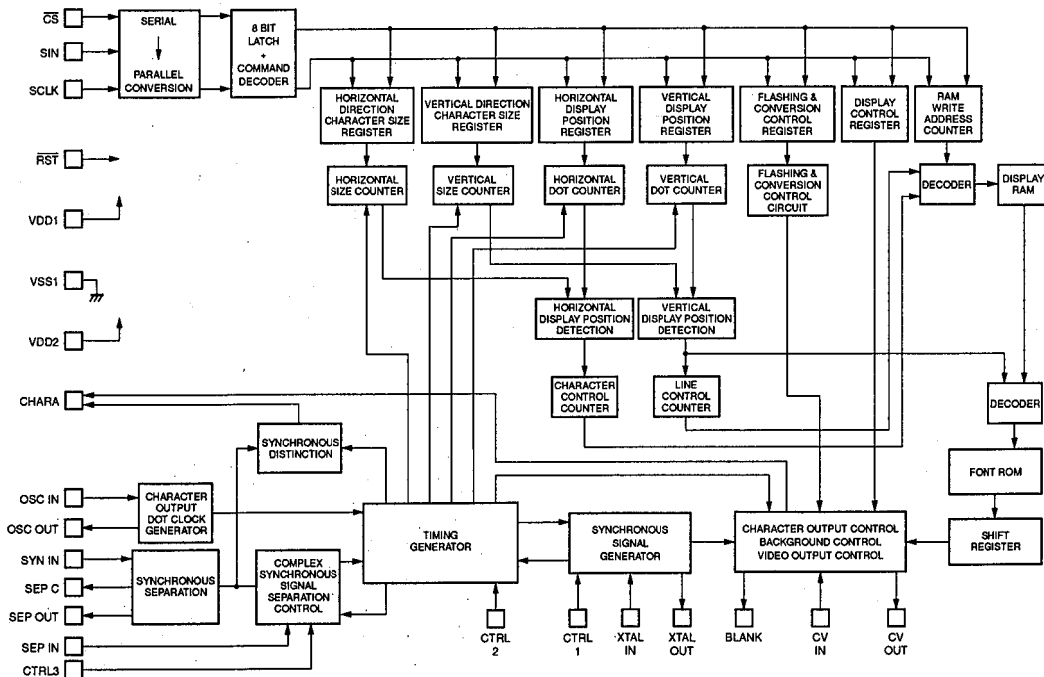
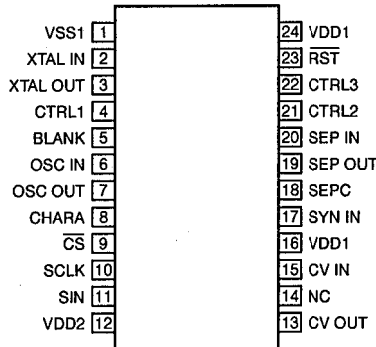
IC301 : M38197MA-176FP
8 bit μ -COM

No.	Port	Name	Function
28	P46	PON	POWER ON OUT [0 : ON 1 : OFF]
29	INT1	ACPIN	Power down AC pulse in
30	INT4	SCRNSIGIN	LC74781 mix SYNC signal in
31	INT3	CDCEIN	CD display CE in [1 : START]
32	INT2	REMCNIN	Remocon in
33	P41	RDSRESO	RDS RESET OUT [0 : RESET]
34	INT0	RDSSTIN	RDS DATA START IN [0 : START]
35	/RESET	RESET	RESET
36	XCIN	XCIN	32.768 kHz IN (Sub clock)
37	XCOU	XCOU	32.768 kHz OUT (Sub clock)
38	XIN	XIN	8 MHz IN (Main clock)
39	XOUT	XOUT	8 MHz OUT (Main clock)
40	VSS	GND	GND
41	P27	CDREST	CD CPU RESET OUT [0 : RESET]
42	P26	VCRINH	VCR REC INHIBIT OUT [1 : INHIBIT]
43	P25	SIGSELB	LA7956 control B OUT
44	P24	SIGSELA	LA7956 control A OUT
45	P23		(Open) (Vee pull-down)
46	P22		(Open) (Vee pull-down)
47	P21		(Open) (Vee pull-down)
48	P20		(Open) (Vee pull-down)
49	P17		(Open) (Vee pull-down)
50	P16		(Open) (Vee pull-down)
51	P15		(Open) (Vee pull-down)
52	P14		(Open) (Vee pull-down)
53	P13		(Open) (Vee pull-down)
54	P12	DIG10	G 11 (Vee pull-down)
55	P11	DIG9	G 10 (Vee pull-down)
56	P10	DIG8	G 9 (Vee pull-down)
57	P07	DIG7	G 8 (Vee pull-down)
58	P06	DIG6	G 7 (Vee pull-down)
59	P05	DIG5	G 6 (Vee pull-down)
60	P04	DIG4	G 5 (Vee pull-down)
61	P03	DIG3	G 4 (Vee pull-down)
62	P02	DIG2	G 3 (Vee pull-down)
63	P01	DIG1	G 2 (Vee pull-down)
64	P00	DIG0	G 1 (Vee pull-down)
65	P37		(Open) (Vee pull-down)
66	P36		(Open) (Vee pull-down)
67	P35	SEG29	P 22 (Vee pull-down)
68	P34	SEG28	P 21 (Vee pull-down)
69	P33	SEG27	P 20 (Vee pull-down)
70	P32	SEG26	P 19 (Vee pull-down)
71	P31	SEG25	P 18 (Vee pull-down)
72	P30	SEG24	P 17 (Vee pull-down)
73	P97	SEG23	P 16 (Vee pull-down)
74	P96	SEG22	P 15 (Vee pull-down)
75	P95	SEG21	P 14 (Vee pull-down)
76	P94	SEG20	P 13 (Vee pull-down)
77	P93	SEG19	P 12 (Vee pull-down)
78	P92	SEG18	P 11 (Vee pull-down)
79	P91	SEG17	P 10 (Vee pull-down)
80	P90	SEG16	P 9 (Vee pull-down)
81	P87	SEG15	P 8 (Vee external pull-down)
82	P86	SEG14	P 7 (Vee external pull-down)
83	P85	SEG13	P 6 (Vee external pull-down)
84	P84	SEG12	P 5 (Vee external pull-down)

IC301 : M38197MA-176FP
8 bit μ -COM

No.	Port	Name	Function
85	P83	SEG11	P 4 (Vee external pull-down)
86	P82	SEG10	P 3 (Vee external pull-down)
87	P81	SEG9	P 2 (Vee external pull-down)
88	P80	SEG8	P 1 (Vee external pull-down)
89	PA7	IN	SW-7 (Vee pull-down/pull-up)
90	PA6	IN	SW-6 (Vee pull-down/pull-up)
91	VCC	+5V	+5V
92	PA5	IN	SW-5 (Vee pull-down/pull-up)
93	PA4	IN	SW-4 (Vee pull-down/pull-up)
94	PA3	IN	SW-3 (Vee pull-down/pull-up)
95	PA2	IN	SW-2 (Vee pull-down/pull-up)
96	PA1	IN	SW-1 (Vee pull-down/pull-up)
97	PA0	IN	SW-0 (Vee pull-down/pull-up)
98	VEE	VEE	P0, P1, P3, P9 pull-down resistor power in
99	AVSS	AVSS	GND (VSS)
100	VREF	VREF	A-D, D-A reference voltage in

IC206 : LC74781-9626
Superimpose



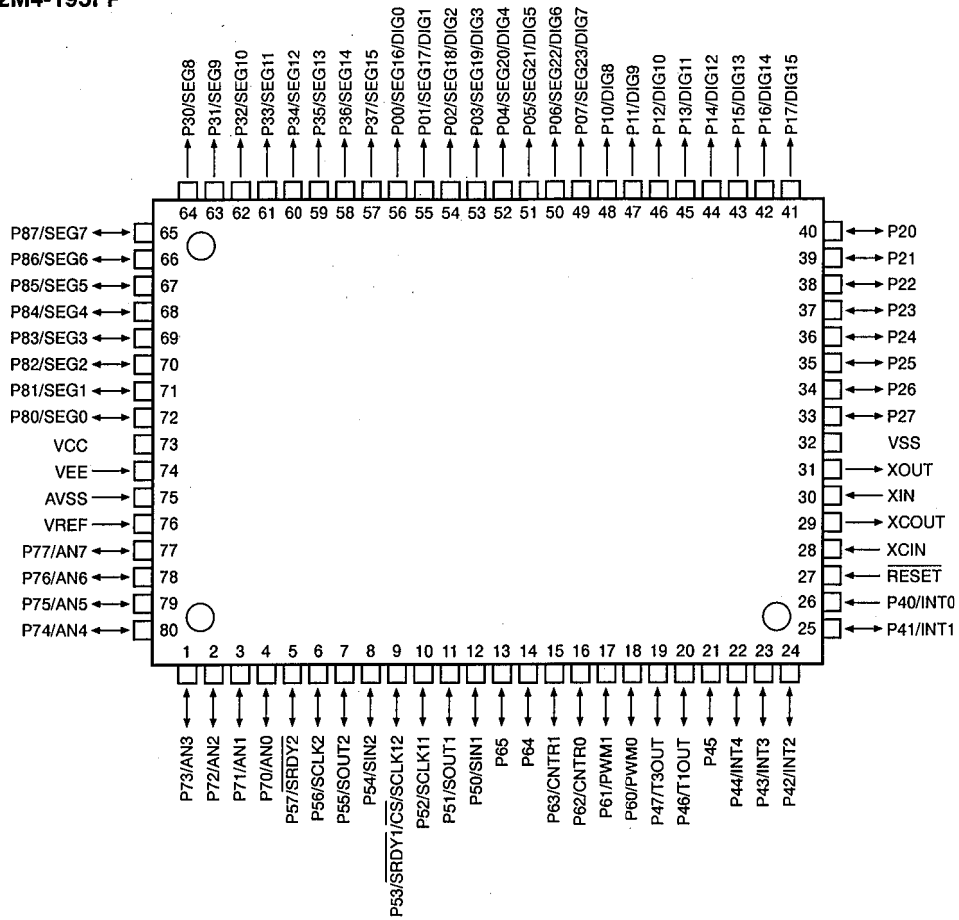
AV-1

IC206 : LC74781-9626
Superimpose

Pin No.	Symbol	Terminal name	Function
1	VSS1	Ground terminal	Connection to GND (Digital system ground terminal)
2	XTAL IN	Crystal oscillation terminal	Terminal to connect the crystal of the crystal oscillator for internal synchronous signal generation and a capacitor or to input an external clock. (2fsc or 4fsc)
3	XTAL OUT		
4	CTRL1	Crystal oscillation input switching terminal	Switching terminal between the mode to input a clock externally and the mode for crystal oscillation. [L] = Crystal oscillation, [H] = External clock input
5	BLANK	Blank output terminal	Terminal to output the blank signal (character and bordering OR signal) (MOD0 : complex synchronous signal output at [H]). When resetting (RST terminal = [L]), a crystal oscillation clock is output (but not when resetting by the command).
6	OSC IN	LC oscillation terminal	Terminal to connect the coil of the oscillator for character output dot clock generation and a capacitor.
7	OSC OUT		
8	CHARA	Character output terminal	Terminal to output a character signal (MOD0 : It becomes an output terminal to judge the external synchronous signal at [H] and outputs the result after judging existence of the external synchronous signal. When a synchronous signal exists, [H] is output.) When resetting (RST terminal = [L]), a dot clock (LC oscillation) is output (but it is not output when reset by the command.)
9	/CS	Enable input terminal	Serial data input enable input terminal. The serial data input becomes enable at [L]. A pull-up resistor is built in (hysteresis input).
10	SCLK	Clock input terminal	Input terminal of clock for serial data input. A pull-up resistor is built in (hysteresis input).
11	SIN	Data input terminal	Serial data input terminal. A pull-up resistor is built in (hysteresis input).
12	VDD2	Power supply terminal	Power supply terminal for complex image signal level adjustment (Power supply for analog system)
13	CV OUT	Video signal output terminal	Output terminal for complex image signal.
14	NC		Connected to GND or unconnected.
15	CV IN	Video signal input terminal	Input terminal for complex image signal.
16	VDD1	Power supply terminal	Power supply terminal (+5V : power supply for digital system)
17	SYN IN	Synchronous separation circuit input terminal	Video signal input terminal of the built-in synchronous separation circuit (When the built-in synchronous separation circuit is not used, it becomes a horizontal synchronous signal input or a complex synchronous signal input.)
18	SEP C	Synchronous separation circuit bias voltage terminal	Terminal to monitor built-in synchronous separation circuit bias voltage.
19	SEP OUT	Complex synchronous signal output terminal	Terminal to output a complex synchronous signal of built-in synchronous separation circuit ([H] when internally synchronized at MOD1 : [H], [L] output when externally synchronized) (When the built-in synchronous separation circuit is not used, SYNIN input signal is output.)
20	SEP IN	Vertical synchronous signal input terminal	Terminal to input a vertical synchronous signal by integrating the output signal of SEPOUT terminal. Connect the integration circuit between SEPOUT terminals. Fix it to VDD1 when not used.
21	CTRL2	NTSC/PAL-M switching input terminal	Pin setting has a priority over switching of NTSC/PAL/PAL-M/PAL-N method. The NTSC method is selected after [L]= reset. NTSC/PAL/PAL-M/PAL-N method setting by a command is effective. [H] = PAL-M method.
22	CTRL3	SEPIN input control terminal	Terminal to control whether or not to input VSYNC signal into SEPIN input terminal. [L] = VSYNC inputted, [H] = VSYNC not inputted.
23	/RST	Reset input terminal	System reset input terminal. A pull-up resistor is built in (hysteresis input).
24	VDD1	Power supply terminal (+5V)	Power supply terminal (+5V : power supply for digital system)

SW-AV1 IC DATA

IC413 : M38172M4-195FP
8 bit μ-COM



No.	Port	Name	Function
1	P73	SELCE	LC78213 CE OUT
2	P72	DVRCE	Electric controlled volume (DSP) CE OUT [1 : DATA transfer]
3	P71	MVRCE	Electric controlled volume (LC7536) CE OUT [1 : DATA transfer]
4	P70	DSPCE	DSP (YSS203) CE OUT [1 : DATA transfer]
5	P57		(Vee pull-down GND)
6	P56	DSPCLK	YSS203/LC7536 CLK OUT (Serial I/O2)
7	P55	DSPDAT	YSS203/LC7536 DATA OUT (Serial I/O2)
8	P54		(Vee pull-down GND) (Serial I/O2)
9	P53	SYSCE	Control data CE IN
10	P52	SYSCLK	Control data CLK IN (Serial I/O1)
11	P51		(Vee pull-down GND) (Serial I/O1)
12	P50	SYSDAT	Control data DATA IN (Serial I/O1)
13	P65	PREMUT	PRE MUTE
14	P64	SWMUT	SUBWOOFER MUTE
15	P63	PWRON	POWER ON
16	P62	SPRY	SPEAKER RELAY
17	P61	PWRRY	POWER RELAY
18	P60		(Vee pull-down GND)
19	P47		(Vee pull-down GND)
20	P46		(Vee pull-down GND)
21	P45		(Vee pull-down GND)
22	P44		(Vee pull-down GND)
23	P43		(Vee pull-down GND)
24	P42		(Vee pull-down GND)
25	INT1		(Vee pull-down GND)

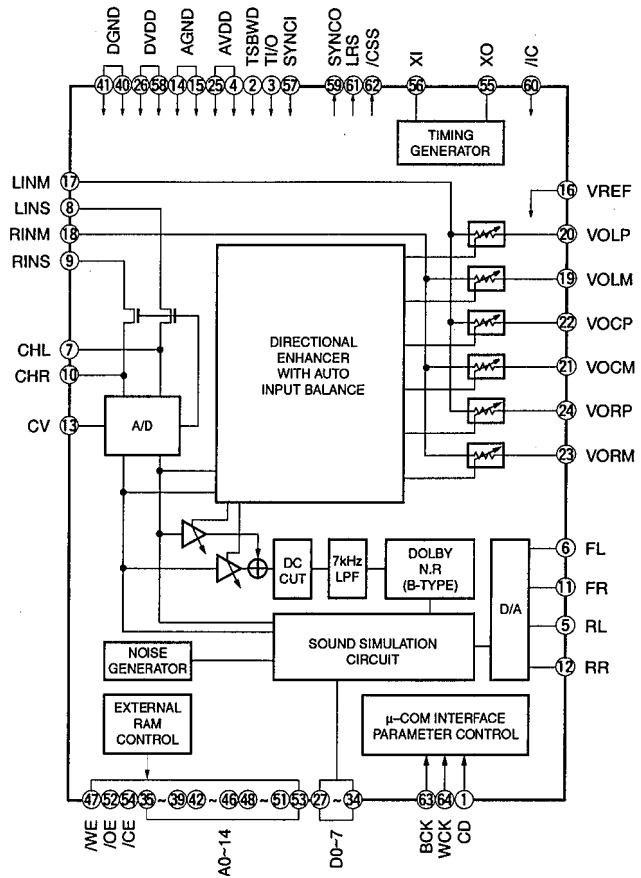
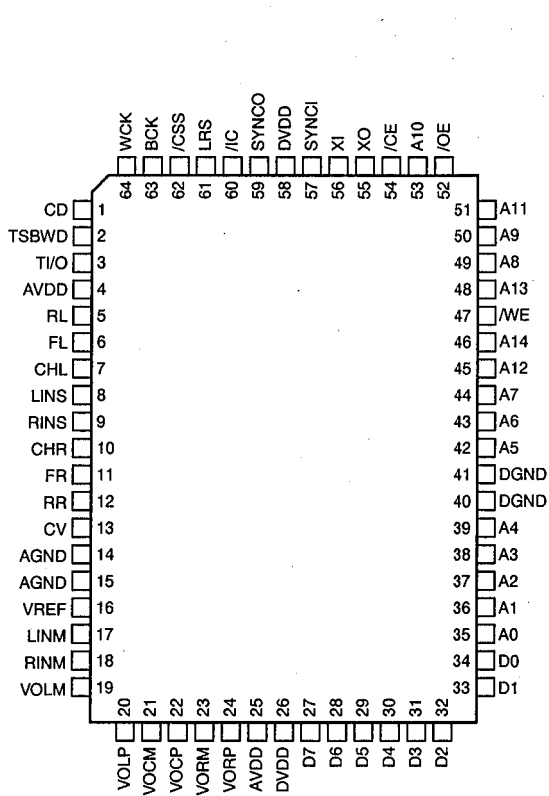
AV-1

IC413 : M38172M4-195FP
8 bit μ -COM

No.	Port	Name	Function	
26	INT0	ACDTC	Power down AC pulse IN	
27	RES	RESET	RESET	
28	XCIN		GND	(Sub clock)
29	XCOU	NC	Open	(Sub clock)
30	XIN	XIN	6.3 MHz IN	(Main clock)
31	XOUT	XOUT	6.3 MHz OUT	(Main clock)
32	VSS	O-GNG	GND	
33	P27	EX7		(Extension-7) (Not used)
34	P26	EX6		(Extension-6) (Not used)
35	P25	EX5		(Extension-5) (Not used)
36	P24	EX4		(Extension-4) (Not used)
37	P23	EX3		(Extension-3) (Not used)
38	P22	EX2		(Extension-2) (Not used)
39	P21	EX1		(Extension-1) (Not used)
40	P20	EX0		(Extension-0) (Not used)
41	P17	NC	Open	
42	P16	NC	Open	
43	P15	NC	Open	
44	P14	NC	Open	
45	P13	NC	Open	
46	P12	NC	Open	
47	P11	NC	Open	
48	P10	NC	Open	
49	P07	NC	Open	
50	P06	NC	Open	
51	P05	NC	Open	
52	P04	NC	Open	
53	P03	NC	Open	
54	P02	NC	Open	
55	P01	NC	Open	
56	P00	NC	Open	
57	P37	NC	Open	
58	P36	NC	Open	
59	P35	NC	Open	
60	P34	NC	Open	
61	P33	NC	Open	
62	P32	NC	Open	
63	P31	NC	Open	
64	P30	NC	Open	
65	P87		(Vee pull-down GND)	
66	P86		(Vee pull-down GND)	
67	P85		(Vee pull-down GND)	
68	P84		(Vee pull-down GND)	
69	P83		(Vee pull-down GND)	
70	P82		(Vee pull-down GND)	
71	P81		(Vee pull-down GND)	
72	P80	PROTEC	PROTECTION	
73	VCC	5V	+5V	
74	VEE		GND	
75	AVSS		GND	
76	VREF		GND	
77	AN7		(Vee pull-down GND)	(A-D)
78	AN6		(Vee pull-down GND)	(A-D)
79	AN5		(Vee pull-down GND)	(A-D)
80	AN4		(Vee pull-down GND)	(A-D)

IC416 : YSS203B

Digital Dolby Pro Logic Decoder with Auto Input Balance



No.	Name	I/O	Function
1	CD	I/O	Serial data of parameter data input
2	TSBWD	Ic	LSI test terminal Normally connected to DVDD terminal
3	TI/O	Ic	LSI test terminal Normally connected to DVDD terminal
4	AVDD	A—	+5V power supply (D/A, A/D section)
5	RL	AO	RL channel D/A output
6	FL	AO	FL channel D/A output
7	CHL	A—	LINS input Sample/hold Capacitor external terminal
8	LINS	AI	L channel A/D input
9	RINS	AI	R channel A/D input
10	CHR	A—	RINS input Sample/hold Capacitor external terminal
11	FR	AO	FR channel D/A output
12	RR	AO	RR channel D/A output
13	CV	AO	A/D, multiplying DAC center voltage
14	AGND	A—	Ground (D/A, A/D section)
15	AGND	A—	Ground (Multiplying DAC section)
16	VREF	AI	Multiplying DAC reference voltage input
17	LINM	AI	L channel Multiplying DAC input
18	RINM	AI	R channel Multiplying DAC input
19	VOLM	AO	L channel operation amplifier, connected to (-) terminal
20	VOLP	AO	L channel operation amplifier, connected to (+) terminal

IC416 : YSS203B

Digital Dolby Pro Logic Decoder with Auto Input Balance

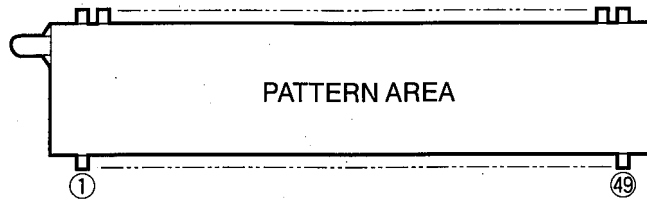
No.	Name	I/O	Function
21	VOCM	AO	C channel operation amplifier, connected to (-) terminal
22	VOCP	AO	C channel operation amplifier, connected to (+) terminal
23	VORM	AO	R channel operation amplifier, connected to (-) terminal
24	VORP	AO	R channel operation amplifier, connected to (+) terminal
25	AVDD	A—	+5V power supply (multiplying DAC section)
26	DVDD	—	+5V power supply (digital section)
27	D7	I/Ot	External delay RAM data terminal
28	D6	I/Ot	External delay RAM data terminal
29	D5	I/Ot	External delay RAM data terminal
30	D4	I/Ot	External delay RAM data terminal
31	D3	I/Ot	External delay RAM data terminal
32	D2	I/Ot	External delay RAM data terminal
33	D1	I/Ot	External delay RAM data terminal
34	D0	I/Ot	External delay RAM data terminal
35	A0	O	External data RAM address terminal
36	A1	O	External data RAM address terminal
37	A2	O	External data RAM address terminal
38	A3	O	External data RAM address terminal
39	A4	O	External data RAM address terminal
40	DGND	—	Ground (digital section)
41	DGND	—	Ground (digital section)
42	A5	O	External data RAM address terminal
43	A6	O	External data RAM address terminal
44	A7	O	External data RAM address terminal
45	A12	O	External data RAM address terminal
46	A14	O	External data RAM address terminal
47	/WE	O	External delay RAM write enable terminal
48	A13	O	External delay RAM address terminal
49	A8	O	External delay RAM address terminal
50	A9	O	External delay RAM address terminal
51	A11	O	External delay RAM address terminal
52	/OE	O	External delay RAM output enable terminal
53	A10	O	External delay RAM address terminal
54	/CE	O	External delay RAM chip enable terminal
55	XO	O	Crystal oscillator connecting terminal
56	XI	I	Crystal oscillator connecting terminal
57	SYNCI	It	Test terminal for system synchronization, normally connected to DVDD
58	DVDD	—	+5V power supply (digital section)
59	SYNCO	O	Test terminal for system synchronization, normally unconnected
60	/IC	Ics	Initial clear terminal (Power ON resetting is necessary)
61	LRS	O	External automatic input balance terminal, normally unconnected
62	/CSS	O	External automatic input balance terminal, normally unconnected
63	BCK	I _{ts}	Bit clock for parameter data input
64	WCK	I _{ts}	Word clock for parameter data input

Note : Letters used in the above I/O column represent as follows.

I : Input terminal O : Output terminal t : TTL level
c : CMOS level s : Schmitt input A : Analog terminal

■ DISPLAY DATA

● V400 : 11-MT-113GK (VV499500)

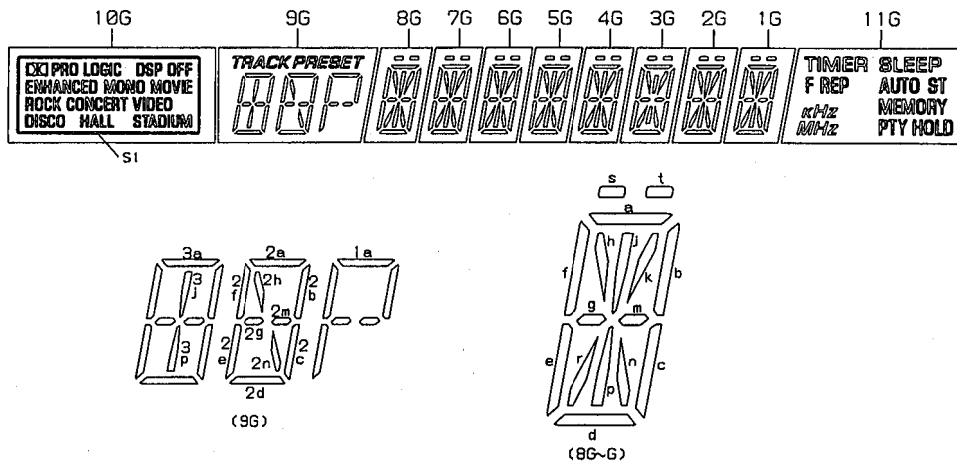


● PIN CONNECTION

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Connection	F1	F1	NP	NP	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NC	NC	NC	NC	NC	NC	NC	P1	P2	P3	P4	P5	P6	P7		
Pin No.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49												
Connection	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	NP	NP	F2	F2												

Note 1) F1, F2 Filament 3) NC No Connection 5) 1G~11G Grid
 2) NP No Pin 4) P1~P22 Datum Line

● GRID ASSIGNMENT



● ANODE CONNECTION

	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	TIMER	S1	3d	d	d	d	d	d	d	d	d
P2	SLEEP	EXI PRO LOGIC	3e	p	p	p	p	p	p	p	p
P3	F	ENHANCED	3c	n	n	n	n	n	n	n	n
P4	REP	MONO MOVIE	3m	r	r	r	r	r	r	r	r
P5	AUTO	ROCK	3g	e	e	e	e	e	e	e	e
P6	ST	CONCERT	3f	c	c	c	c	c	c	c	c
P7	MEMORY	VIDEO	3b	m	m	m	m	m	m	m	m
P8	PTY HOLD	HALL	3j, 3p	g	g	g	g	g	g	g	g
P9	kHz	DISCO	3a	f	f	f	f	f	f	f	f
P10	MHz	STADIUM	2d	b	b	b	b	b	b	b	b
P11	-	DSP OFF	2n	k	k	k	k	k	k	k	k
P12	-	-	2e	h	h	h	h	h	h	h	h
P13	-	-	2c	j	j	j	j	j	j	j	j
P14	-	-	2g, 2m	a	a	a	a	a	a	a	a
P15	-	-	2f	t	t	t	t	t	t	t	t
P16	-	-	2b	s	s	s	s	s	s	s	s
P17	-	-	2h	-	-	-	-	-	-	-	-
P18	-	-	2a	-	-	-	-	-	-	-	-
P19	-	-	1b	-	-	-	-	-	-	-	-
P20	-	-	1n, 1g, 1f, 1a, 1e	-	-	-	-	-	-	-	-
P21	-	-	PRESET	-	-	-	-	-	-	-	-
P22	-	-	TRACK	-	-	-	-	-	-	-	-

PIN CONNECTION DIAGRAM / 半導体外形図

● ICs

BA15218N 	μPC4570HA 	LA7956 	TA7291P 	STK311-020B 	STK400-040
TC4066BP 	TA2040AP TC9299P 	LC72130 LC74781-9626 	LA1835 LC7536-Y LC78213 LC78211 		
NJM4558MT-1 NJM2068MD-T1 μPC4570G2 	LH5P832N-20 	AN8806SB 	M38024M6-243FP 	M38172M4-195FP 	
SN74HC125NSR 	LA6536M 	YSS203B 	MN66271RA 	M38197MA-176FP 	
TC4053BF 					

● Diodes

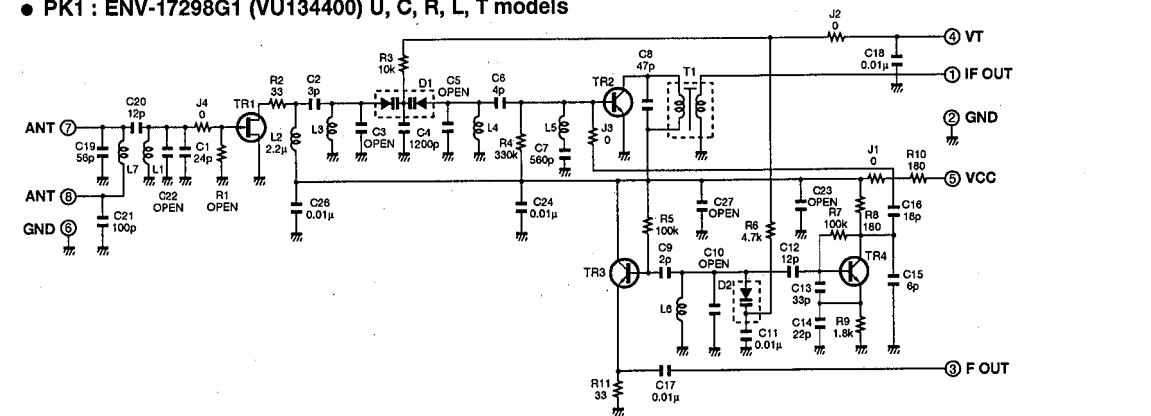
MA8039-H MA8056-M MA8051-M MA8062-H MA8068-M MA8110-L MA8120-H MA8270-M UDZ7.5B 	1SS355 1SS380 	1SS133 1SR139-400 MTZJ5.1A MTZJ13.0B MTZJ6.2C 	S1V820 	RBV-602
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● Transistors

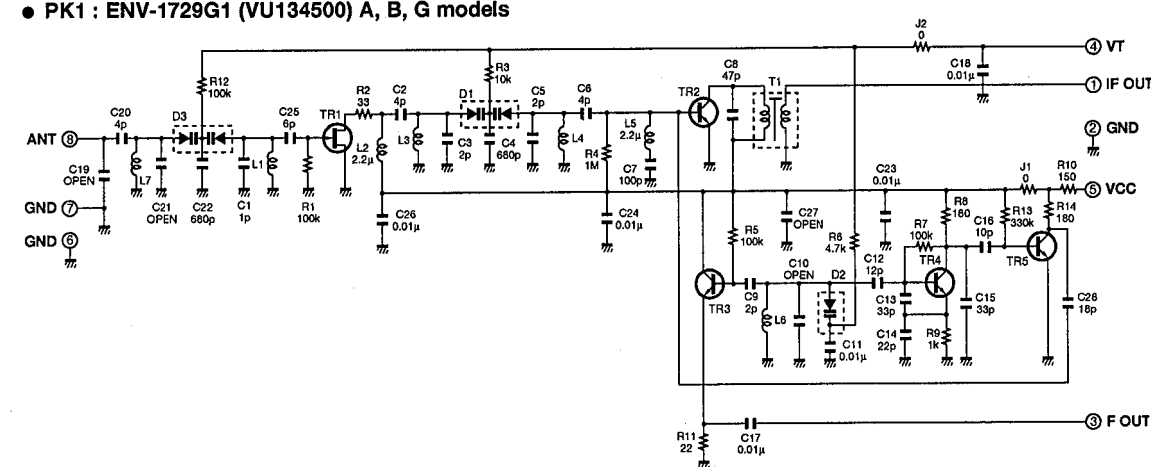
2SA933S (Q, R) 2SC1740S (R, S) DTA114ES DTA144ES DTC144ES 	DTC144EK
2SA970 (GR, BL) 2SB647 (C, D) 2SB660 (E, F) 2SC535 (A, B, C) 2SC2240 (GR, BL) 2SC2878 (A, B) 2SC4208A (Q, R, S) 	2SB1565 (E, F) 2SD2396 (J, K)

FRONT END PACK / フロントエンドパック

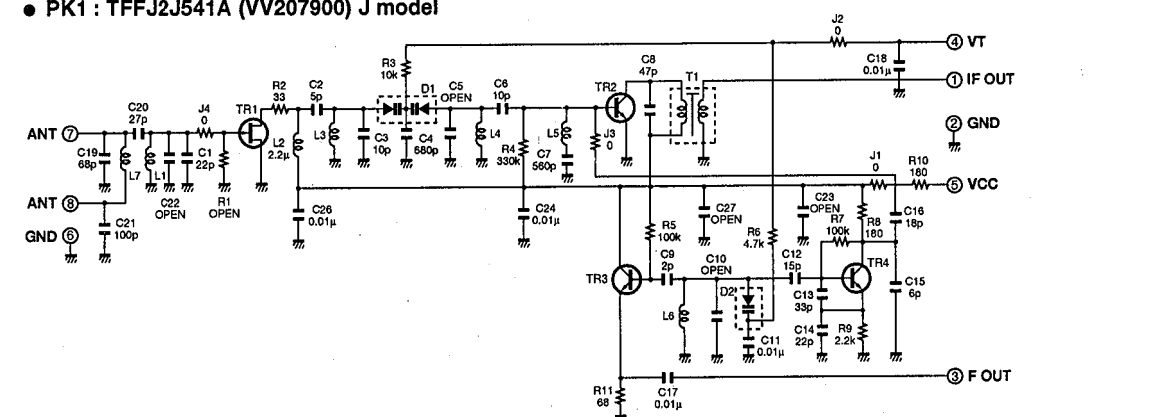
● PK1 : ENV-17298G1 (VU134400) U, C, R, L, T models



● PK1 : ENV-1729G1 (VU134500) A, B, G models



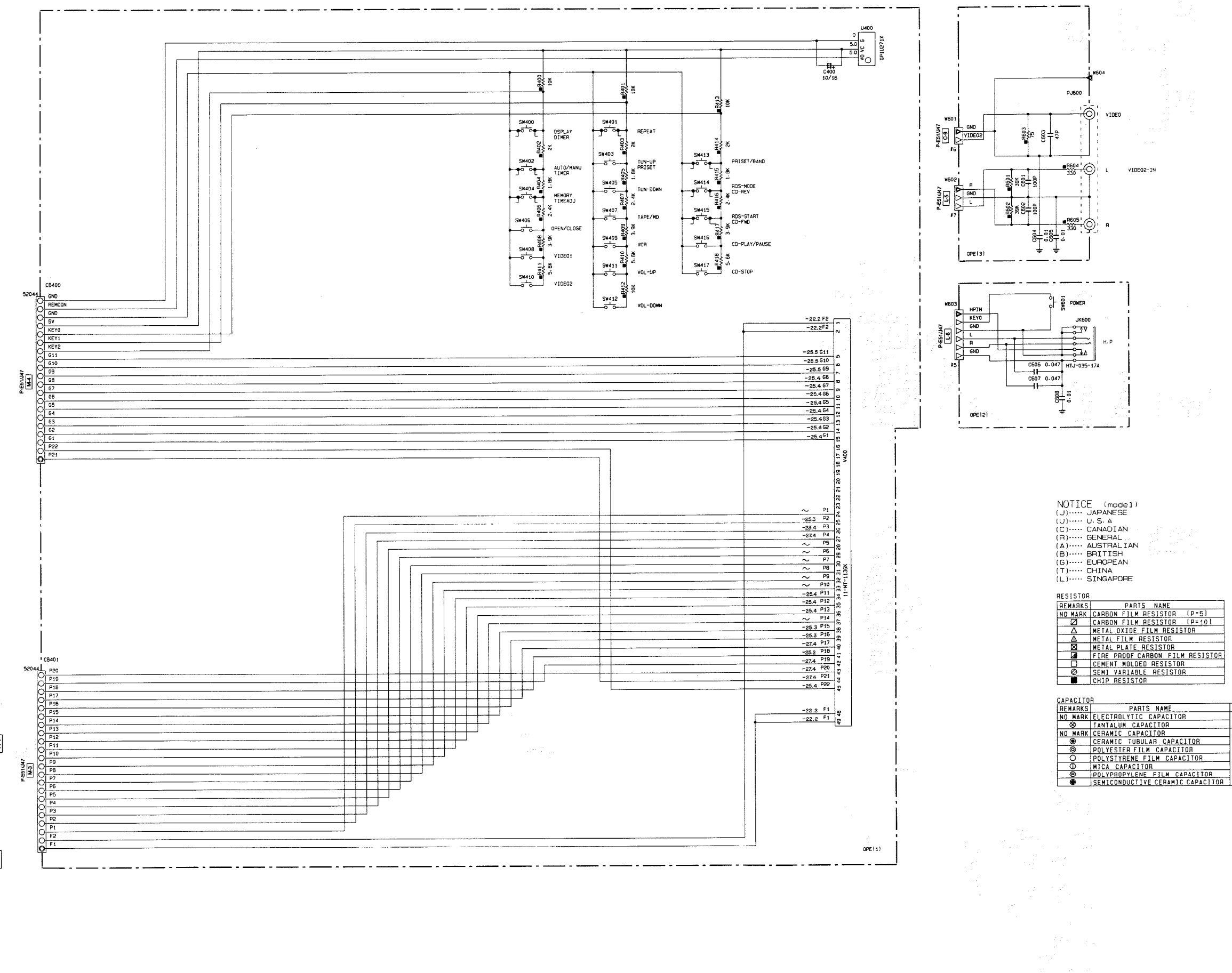
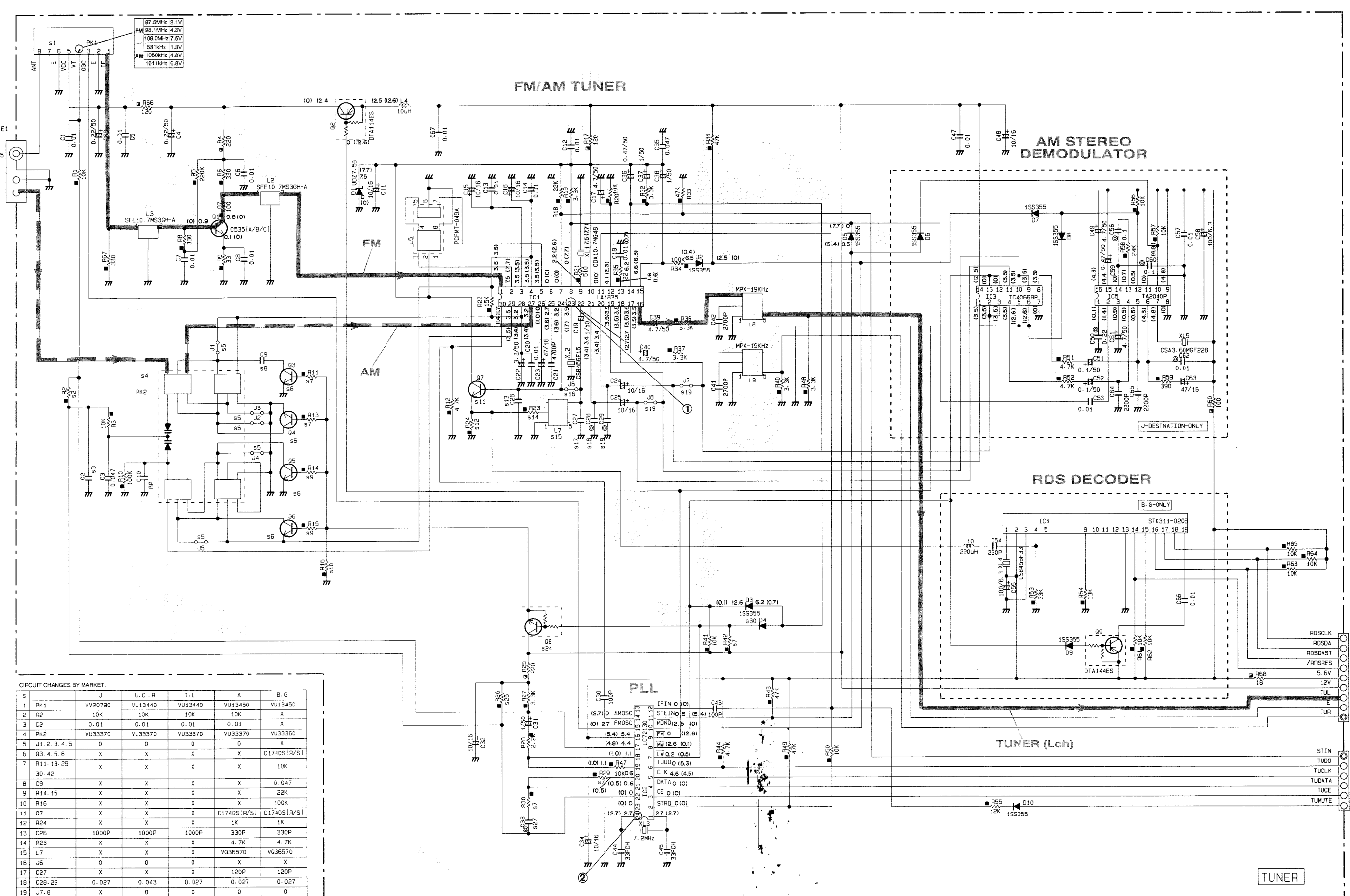
● PK1 : TFFJ2J541A (VV207900) J model



TCD-AV1 SCHEMATIC DIAGRAM / 総回路図 (TUNER & OPERATION)

Each voltage represents the voltage when receiving FM (stereo) signal and the voltage in the parentheses () is the voltage when receiving AM signal.

チューナー部の電圧は、FM83.0MHzステレオ受信時の電圧です。ただし、()の電圧は、AM1080kHz受信時の電圧です。



CIRCUIT CHANGES BY MARKET

	J	U.C.	T	S.L.	A	B.G.
1	PK1	X	X	X	X	X
2	C2	X	X	X	X	X
3	C2	X	X	X	X	X
4	PK2	X	X	X	X	X
5	J1, 2, 3, 4, 5	X	X	X	X	X
6	J2, 4, 5, 6	X	X	X	X	X
7	PK1, 2, 3, 4, 5	X	X	X	X	X
8	C9	X	X	X	X	X
9	PK1, 5	X	X	X	X	X
10	PK1	X	X	X	X	X
11	J1	X	X	X	X	X
12	PK1	X	X	X	X	X
13	C26	X	X	X	X	X
14	PK1	X	X	X	X	X
15	L7	X	X	X	X	X
16	PK1	X	X	X	X	X
17	C27	X	X	X	X	X
18	C28, 29	X	X	X	X	X
19	U7, 8	X	X	X	X	X
20						
21						
22						
23						
24	PK1	X	X	X	X	X
25	PK1	X	X	X	X	X
26						
27	C33	X	X	X	X	X
28						
29						
30	PK1	X	X	X	X	X

X: NOT USED
O: USED

NOTICE (mode 1)

(J)..... JAPANESE
(U)..... U. S. A.
(C)..... CANADIAN
(P)..... GENERAL
(A)..... AUSTRALIAN
(B)..... BRITISH
(G)..... EUROPEAN
(L)..... SINGAPORE

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
△	CARBON FILM RESISTOR (P=10)
▲	METAL OXIDE FILM RESISTOR
△	METAL FILM RESISTOR
▲	METAL PLATE RESISTOR
○	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
◇	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
○	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊙	CERAMIC TUBULAR CAPACITOR
⊗	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
○	MICA CAPACITOR
⊙	POLYPROPYLENE FILM CAPACITOR
⊗	SEMICONDUCTIVE CERAMIC CAPACITOR

NOTICE (mode 2)

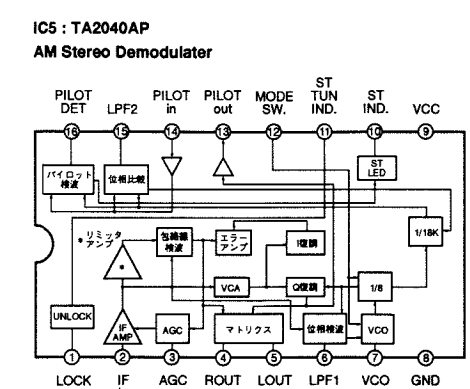
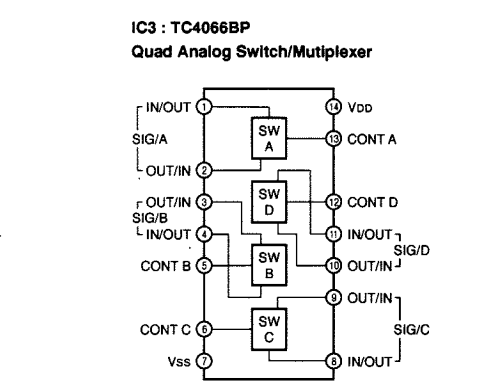
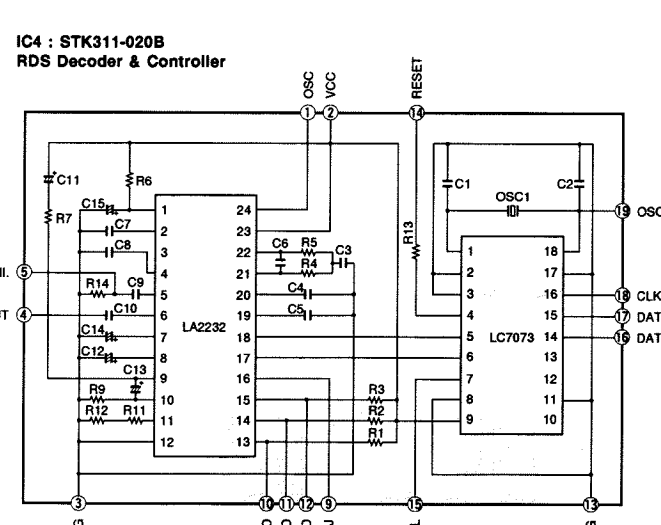
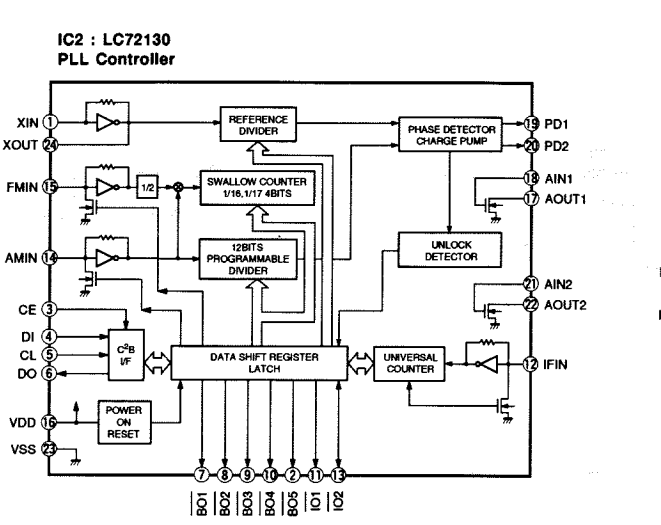
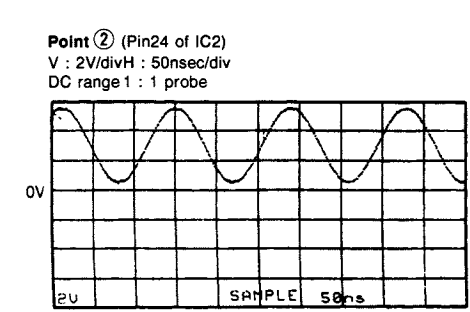
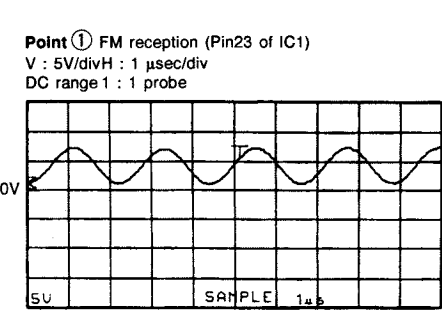
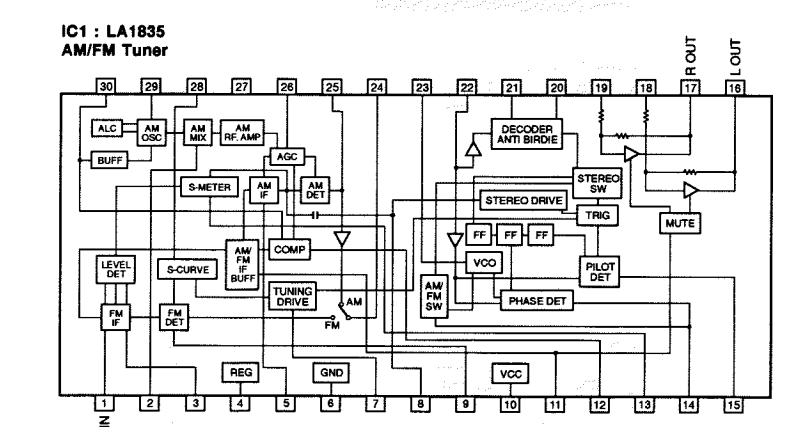
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(U)..... U. S. A.
(C)..... CANADIAN
(P)..... GENERAL
(A)..... AUSTRALIAN
(B)..... BRITISH
(G)..... EUROPEAN
(L)..... SINGAPORE

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
△	CARBON FILM RESISTOR (P=10)
▲	METAL OXIDE FILM RESISTOR
△	METAL FILM RESISTOR
▲	METAL PLATE RESISTOR
○	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
◇	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

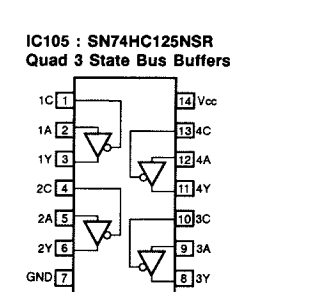
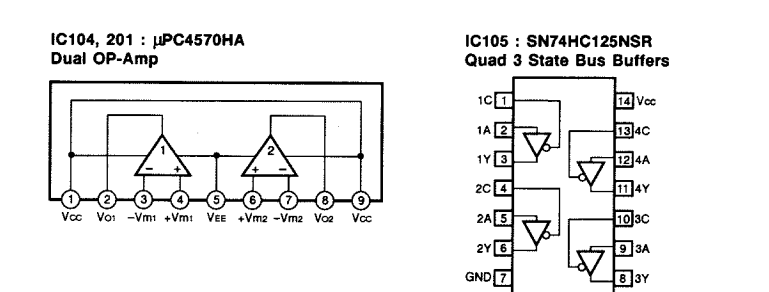
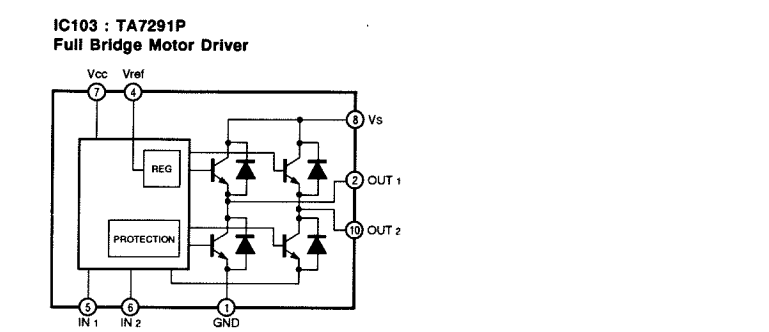
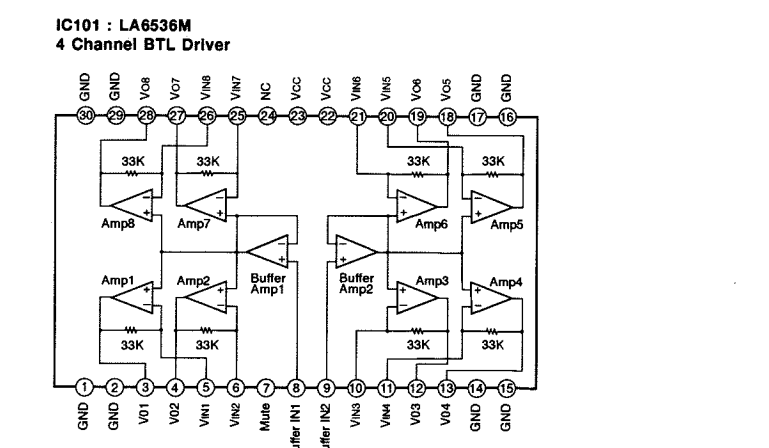
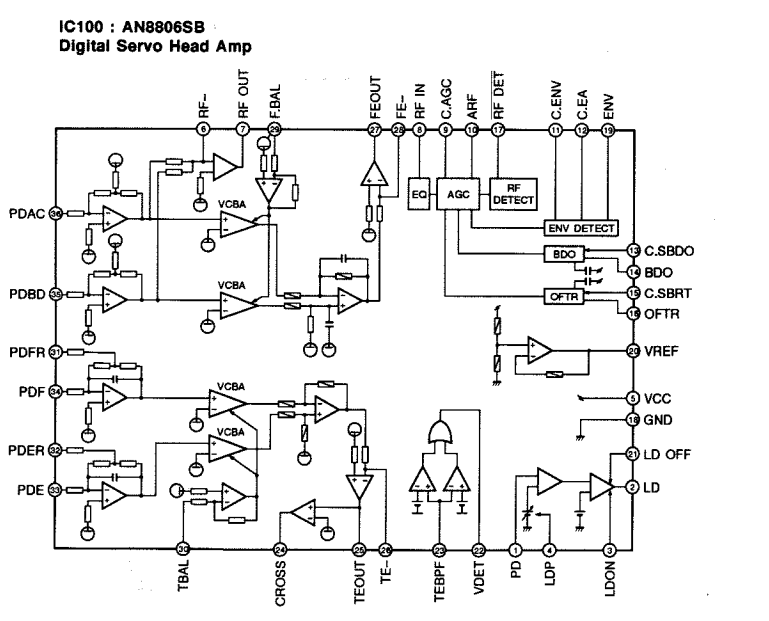
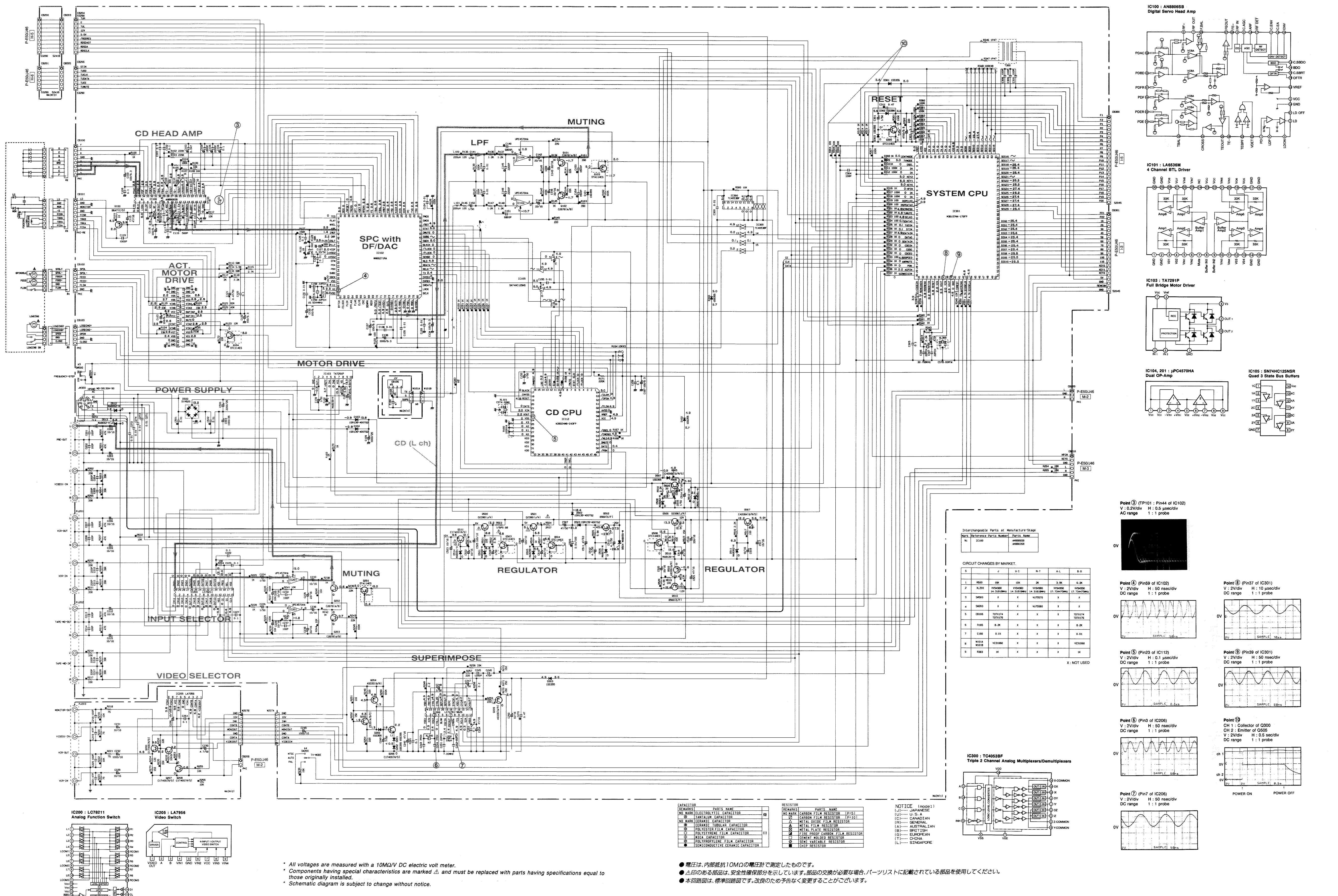
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
○	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊙	CERAMIC TUBULAR CAPACITOR
⊗	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
○	MICA CAPACITOR
⊙	POLYPROPYLENE FILM CAPACITOR
⊗	SEMICONDUCTIVE CERAMIC CAPACITOR



* All voltages are measured with a 10MΩ/V DC electric volt meter.
* Components having special characteristics are marked △, and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.

●電圧は、内部抵抗10MΩの電圧計で測定したものです。
●△印のある部品は、安全性確保部分を示しています。部品の交換が必要な場合、パーツリストに記載されている部品を使用してください。
●本回路図は、標準回路図です。改良のため予告なく変更することがございます。

AV-1
TCD-AV1 SCHEMATIC DIAGRAM / 総回路図 (MAIN)



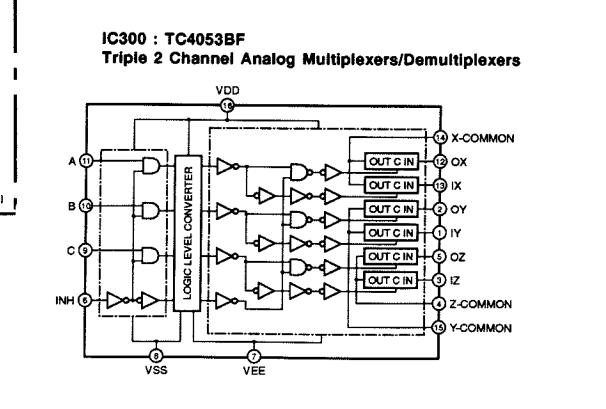
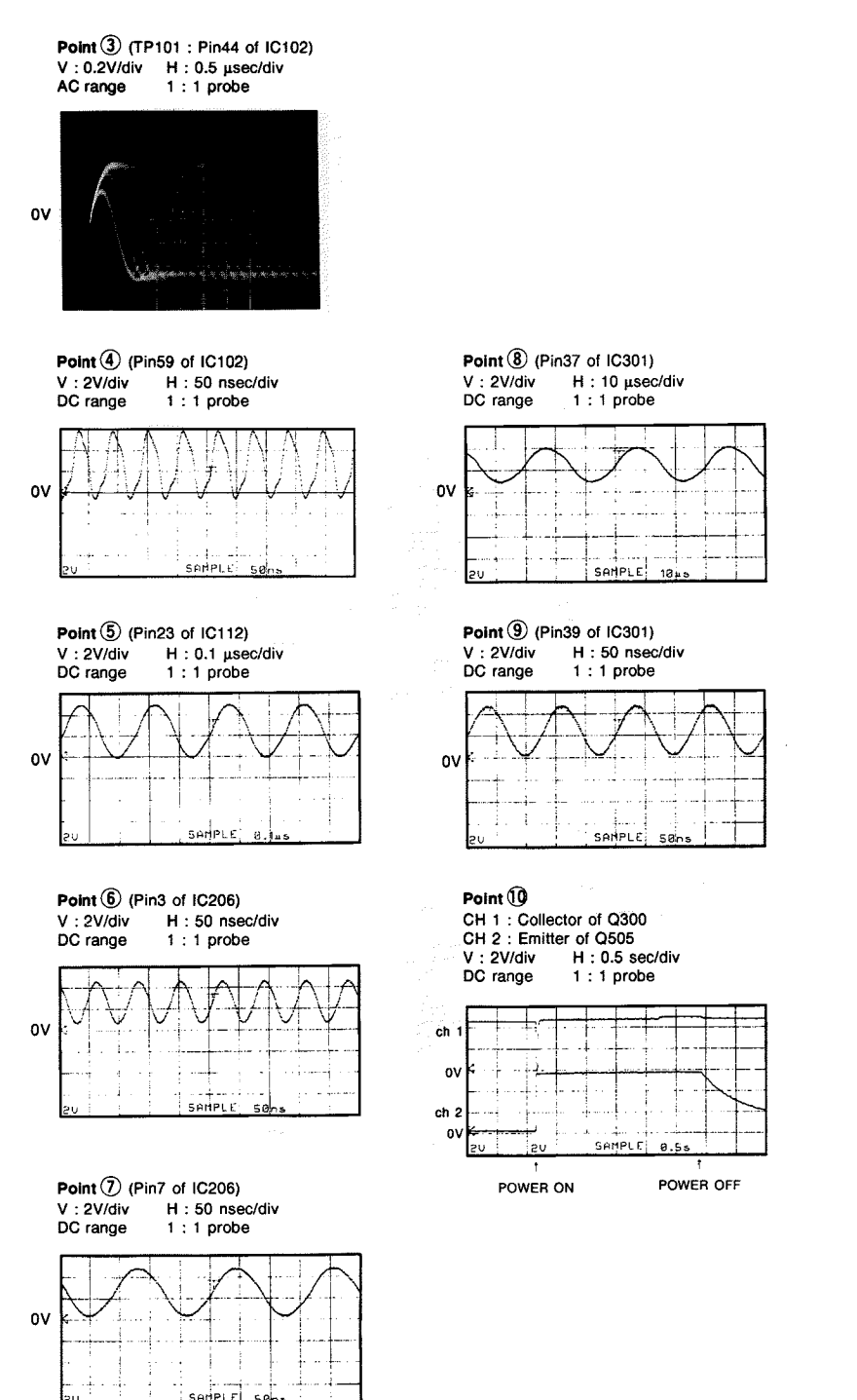
Interchangeable Parts at Manufacture Stage

NO.	MARK	PARTS NAME	DATE
1	IC100	AN8806SB	AN8806SB

CIRCUIT CHANGES BY MARKET.

S	Z	U.C	A.T	A.L	B.S	
1	RES0	10K	10K	2K	3.3K	5.2K
2	AL200	VY9900	VY9900	VY9900	VY9900	VY9900
3	SM650	X	X	VC75073	X	X
4	SM600	X	X	VC75060	X	X
5	DR006	1074174	X	X	1074174	1074174
6	FR00	8.2K	X	X	X	8.2K
7	CI00	0.01	X	X	X	0.01
8	VI014	V23060	X	X	X	V23060
9	NR00	1K	X	X	X	1K

X: NOT USED

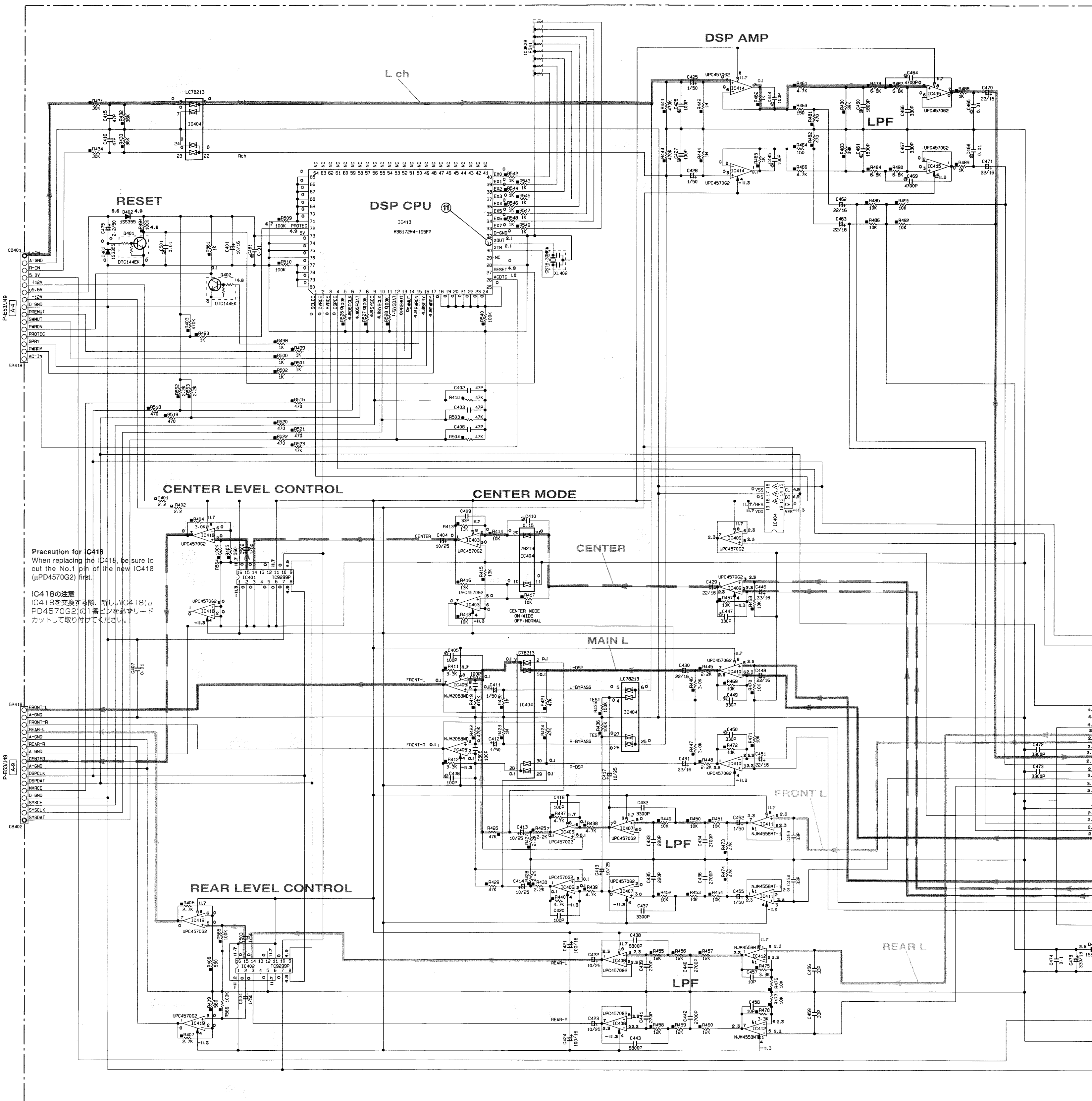


CAPACITOR	PARTS NAME	REMARKS	PARTS NAME	REMARKS
NO MARK	ELECTROLYTIC CAPACITOR	(J)..... JAPANESE	NO MARK	CARBON FILM RESISTOR (±1%)
TA	TANTALUM CAPACITOR	(U)..... U.S.A	CF	CARBON FILM RESISTOR (±0.1%)
NO MARK	CERAMIC CAPACITOR	(C)..... CANADIAN	MF	METAL OXIDE FILM RESISTOR
NO MARK	CERAMIC CAPACITOR	(A)..... AUSTRALIAN	MP	METAL PLATE RESISTOR
NO MARK	POLYESTER FILM CAPACITOR	(B)..... BRITISH	CF	FILM PRINTED CARBON FILM RESISTOR
NO MARK	POLYPROPYLENE FILM CAPACITOR	(S)..... SWITZERLAND	CF	FILM PRINTED CARBON FILM RESISTOR
NO MARK	POLYPROPYLENE FILM CAPACITOR	(T)..... THAI	CF	FILM PRINTED CARBON FILM RESISTOR
NO MARK	POLYPROPYLENE FILM CAPACITOR	(Y)..... YUGOSLAVIA	CF	FILM PRINTED CARBON FILM RESISTOR
NO MARK	POLYPROPYLENE FILM CAPACITOR	(L)..... LITHUANIA	CF	FILM PRINTED CARBON FILM RESISTOR
NO MARK	POLYPROPYLENE FILM CAPACITOR	(S)..... SINGAPORE	CF	FILM PRINTED CARBON FILM RESISTOR

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 * Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
 * Schematic diagram is subject to change without notice.

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SW-AV1 SCHEMATIC DIAGRAM / 総回路図 (DSP)



RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
△	CARBON FILM RESISTOR (P=10)
▲	METAL OXIDE FILM RESISTOR
□	METAL FILM RESISTOR
■	FIRE PROOF CARBON FILM RESISTOR
◎	CEMENT MOLDED RESISTOR
○	SEMI VARIABLE RESISTOR
●	CHIP RESISTOR

CAPACITOR

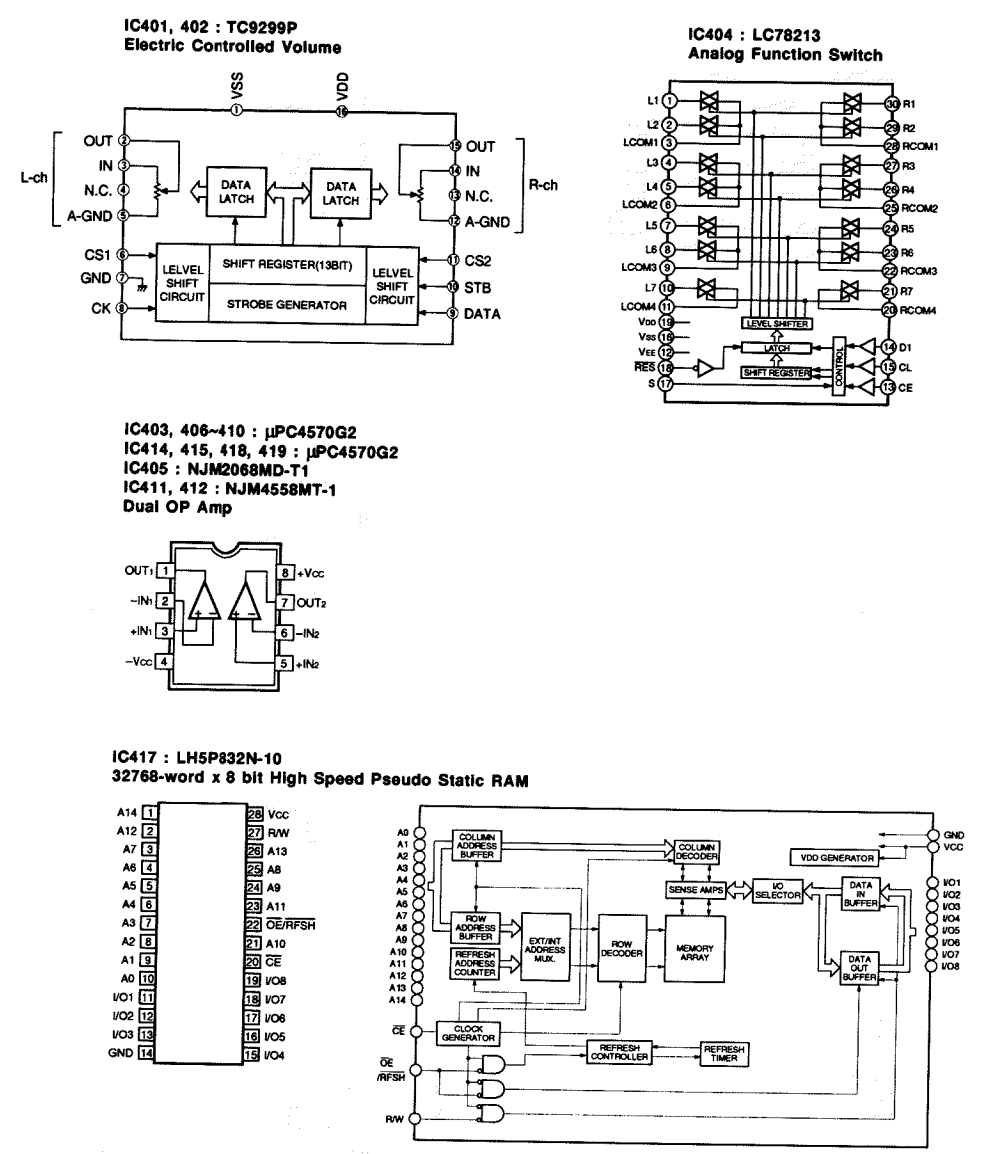
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
◎	TANTALUM CAPACITOR
○	CERAMIC CAPACITOR
●	CERAMIC TUBULAR CAPACITOR
△	POLYESTER FILM CAPACITOR
□	POLYSTYRENE FILM CAPACITOR
◇	MICA CAPACITOR
○	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

NOTICE (model)

(J)..... JAPANESE
 (U)..... U.S.A
 (C)..... CANADIAN
 (R)..... GENERAL
 (A)..... AUSTRALIAN
 (B)..... BRITISH
 (G)..... EUROPEAN
 (TI)..... CHINA
 (L)..... SINGAPORE

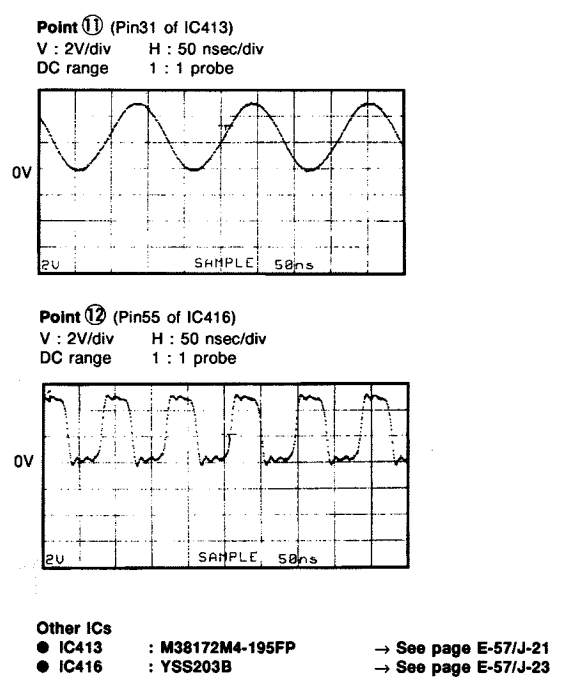
Interchangeable Parts and Stage

Mark	Reference Number	Parts Name
k1	IC411-412	NJM4558M-1
		NJM4558M-11



Precaution for IC418
 When replacing the IC418, be sure to cut the No.1 pin of the new IC418 (μPD4570G2) first.

IC418の注意
 IC418を交換する際、新しいIC418(μPD4570G2)の1番ピンを必ずリードカットして取り付けてください。



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 * Schematic diagram is subject to change without notice.

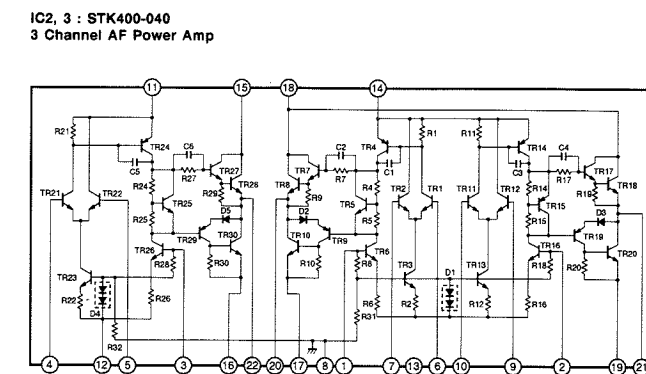
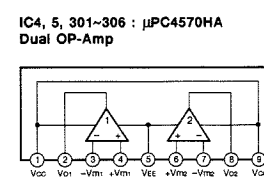
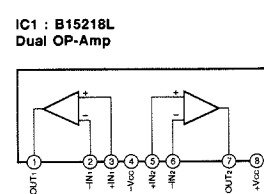
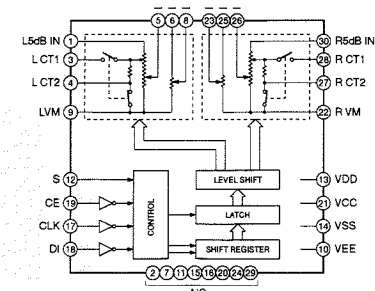
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SW-AV1 SCHEMATIC DIAGRAM / 総回路図 (AMP & VOLUME)

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P-F)
□	CARBON FILM RESISTOR (P-T)
△	METAL FILM RESISTOR
■	METAL PLATE RESISTOR
◇	FIRE-PROOF CARBON FILM RESISTOR
○	CEMENT MOUNTED RESISTOR
◇	SEMI VARIABLE RESISTOR
●	CHIP RESISTOR

REMARKS	PARTS NAME
○	TANTALUM CAPACITOR
●	CERAMIC TUBULAR CAPACITOR
○	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
○	MICA CAPACITOR
○	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

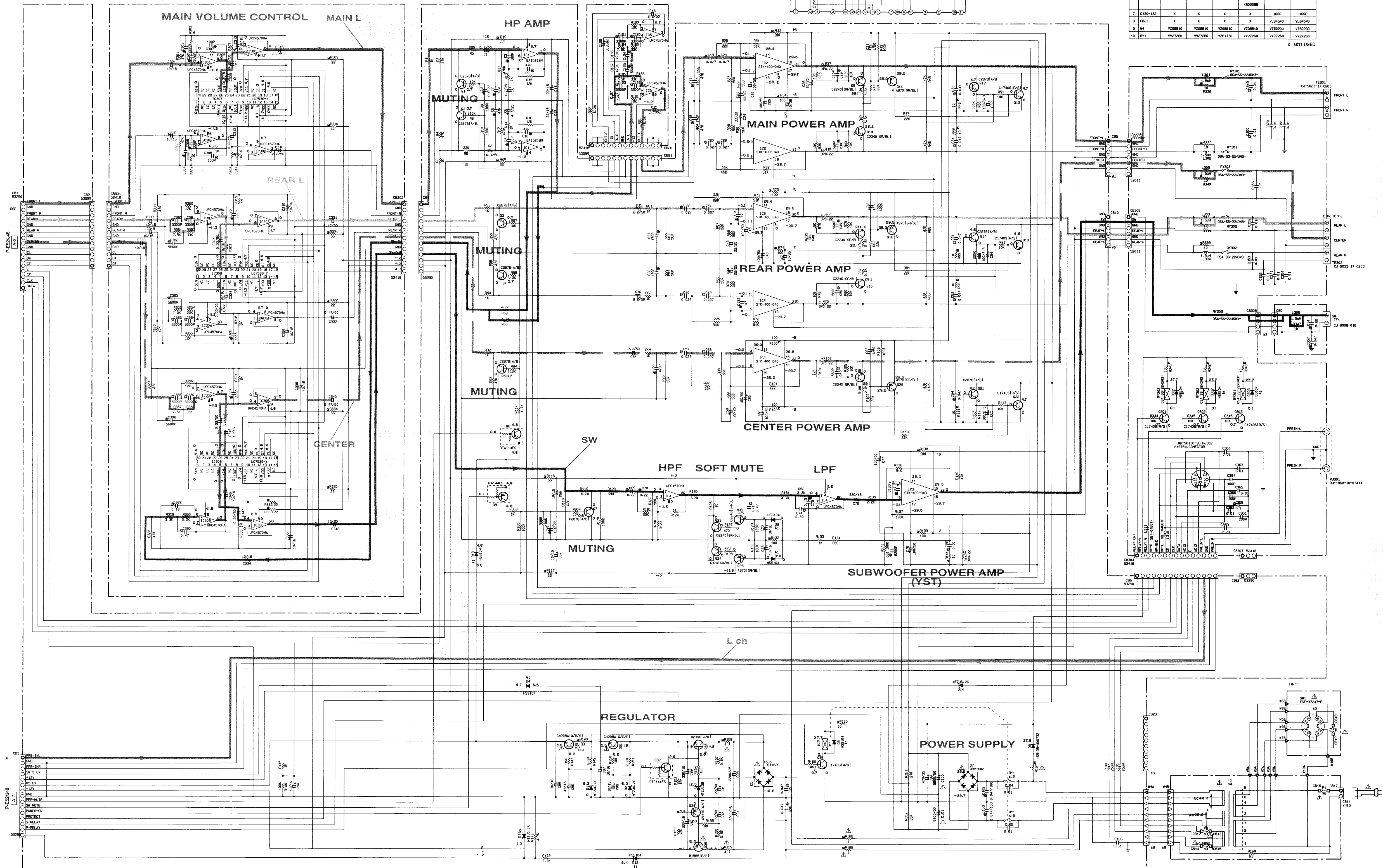
NOTICE (model)
 (J)..... JAPANESE
 (U)..... U. S. A
 (C)..... CANADIAN
 (R)..... GENERAL
 (A)..... AUSTRALIAN
 (B)..... BRITISH
 (G)..... EUROPEAN
 (T)..... CHINA
 (L)..... SINGAPORE



Mark	Reference Parts Number	Parts Name
A1	DA 6.9.10.12.13	HSS104
	301-303	10B130
		10B176

CIRCUIT CHANGES BY MARKET						
S	J	U	C	R.T	A	S-G-L
1	R106	X	1/252-2M	1/252-2M	X	X
2	F1	4A125V	4A125V	4A125V	T1: 25A125V	T1: 25A125V
		Y80230	Y80230	Y80230	K80070	K80068
3	F2-F3	1: 25A125V	1: 25A125V	1A125V	K80177	K80177
		Y80230	Y80230	K80177	K80177	K80177
4	T1	X	X	X	X	X
5	SM1	X	X	X	Y80170	X
6	F4	X	X	X	T1: 25A125V	X
					K80068	
7	C130-132	X	X	X	X	100P
8	CB23	X	X	X	X	VL84540
9	K4	V250B10	V200B10	V200B10	V200B10	V250B10
10	RY1	YV27260	YV27260	YV27260	YV27260	YV27260

X: NOT USED



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