

AV RECEIVER

RX-V365/HTR-6230

SERVICE MANUAL

IMPORTANT NOTICE

This manual has been provided for the use of authorized YAMAHA Retailers and their service personnel.

It has been assumed that basic service procedures inherent to the industry, and more specifically YAMAHA Products, are already known and understood by the users, and have therefore not been restated.

WARNING: Failure to follow appropriate service and safety procedures when servicing this product may result in personal injury, destruction of expensive components, and failure of the product to perform as specified. For these reasons, we advise all YAMAHA product owners that any service required should be performed by an authorized YAMAHA Retailer or the appointed service representative.

IMPORTANT: The presentation or sale of this manual to any individual or firm does not constitute authorization, certification or recognition of any applicable technical capabilities, or establish a principle-agent relationship of any form.

The data provided is believed to be accurate and applicable to the unit(s) indicated on the cover. The research, engineering, and service departments of YAMAHA are continually striving to improve YAMAHA products. Modifications are, therefore, inevitable and specifications are subject to change without notice or obligation to retrofit. Should any discrepancy appear to exist, please contact the distributor's Service Division.

WARNING: Static discharges can destroy expensive components. Discharge any static electricity your body may have accumulated by grounding yourself to the ground buss in the unit (heavy gauge black wires connect to this buss).

IMPORTANT: Turn the unit OFF during disassembly and part replacement. Recheck all work before you apply power to the unit.

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This Service Manual uses recycled paper.



■ TO SERVICE PERSONNEL

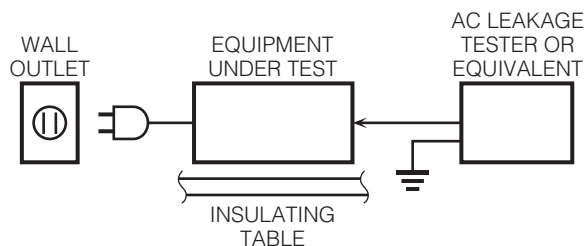
1. Critical Components Information

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 ohms 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.



For U model

“CAUTION”

“F2251: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE 6A, 125V FUSE.”

For C model

CAUTION

F2251: REPLACE WITH SAME TYPE 6A, 125V FUSE.

ATTENTION

F2251: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE DE 6A, 125V.

WARNING: CHEMICAL CONTENT NOTICE!

This product contains chemicals known to the State of California to cause cancer, 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.

About lead free solder

All of the P.C.B.s installed in this unit and solder joints are soldered using the lead free solder.

Among some types of lead free solder currently available, it is recommended to use one of the following types for the repair work.

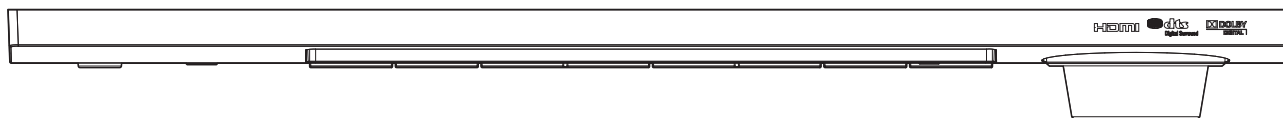
- Sn + Ag + Cu (tin + silver + copper)
- Sn + Cu (tin + copper)
- Sn + Zn + Bi (tin + zinc + bismuth)

Caution:

As the melting point temperature of the lead free solder is about 30°C to 40°C (50°F to 70°F) higher than that of the lead solder, be sure to use a soldering iron suitable to each solder.

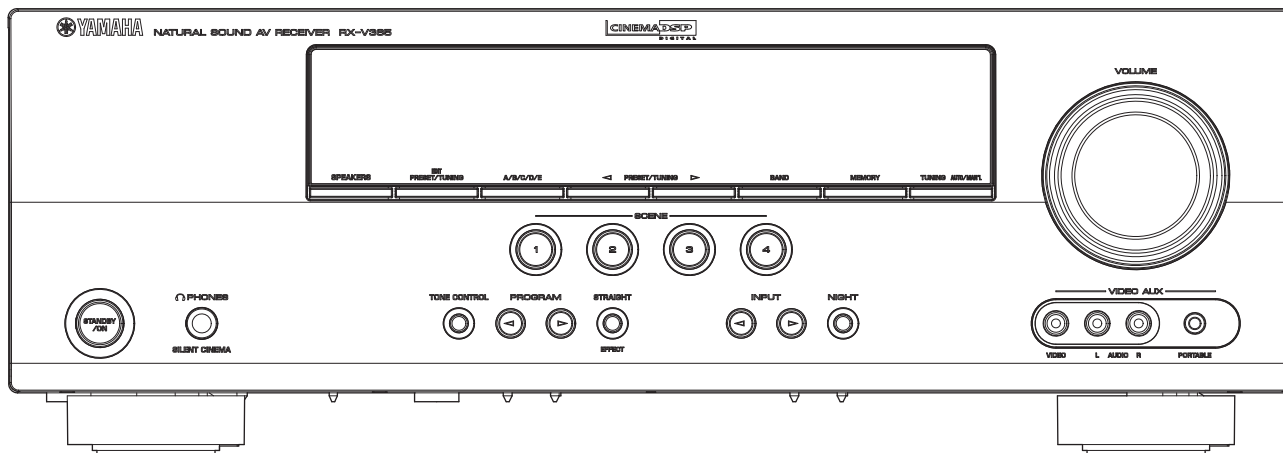
FRONT PANELS

Top view

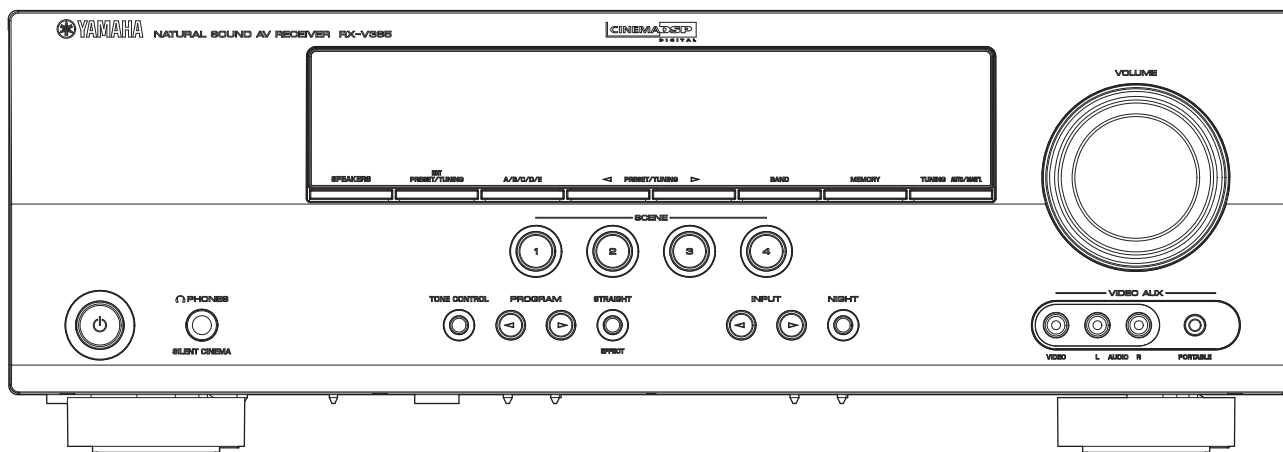


Front view

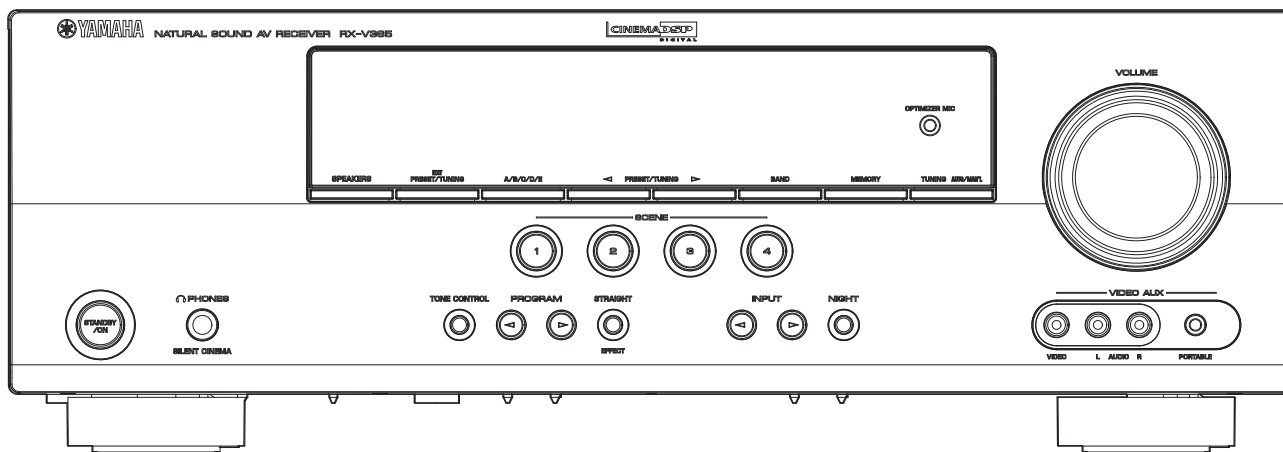
RX-V365 (U, C models)



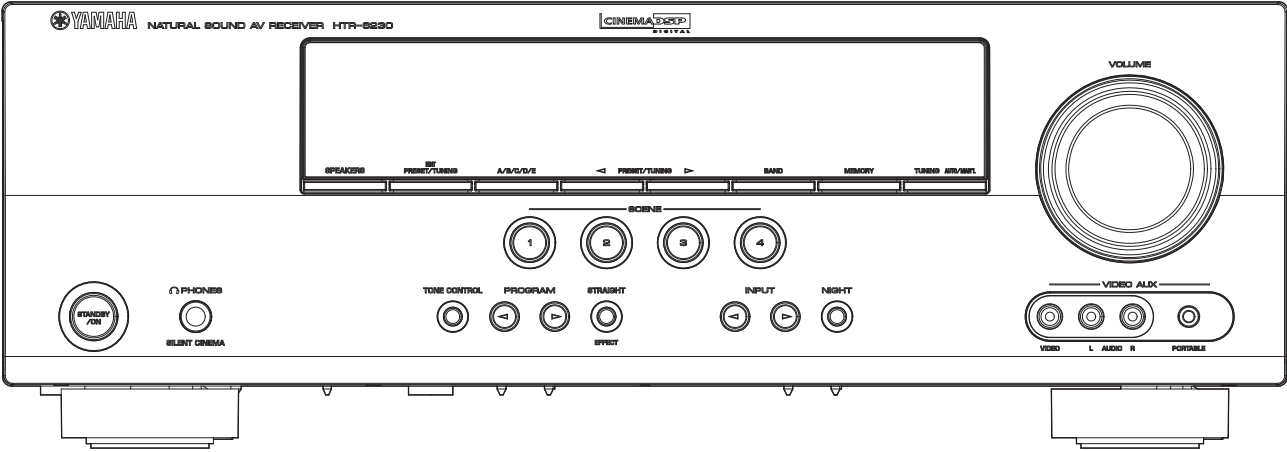
RX-V365 (T model)



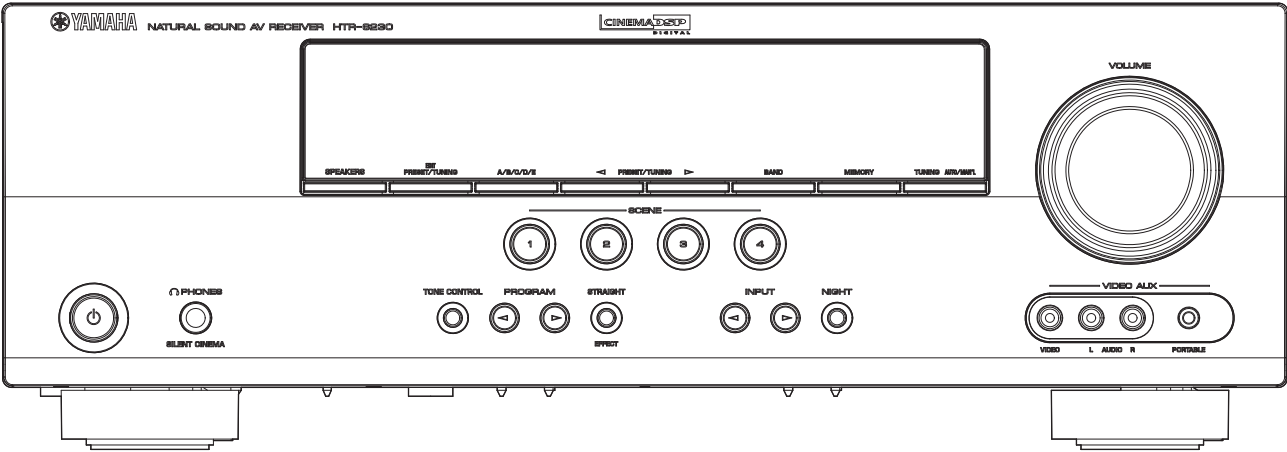
RX-V365 (R, K, A, B, G, E, F, L models)



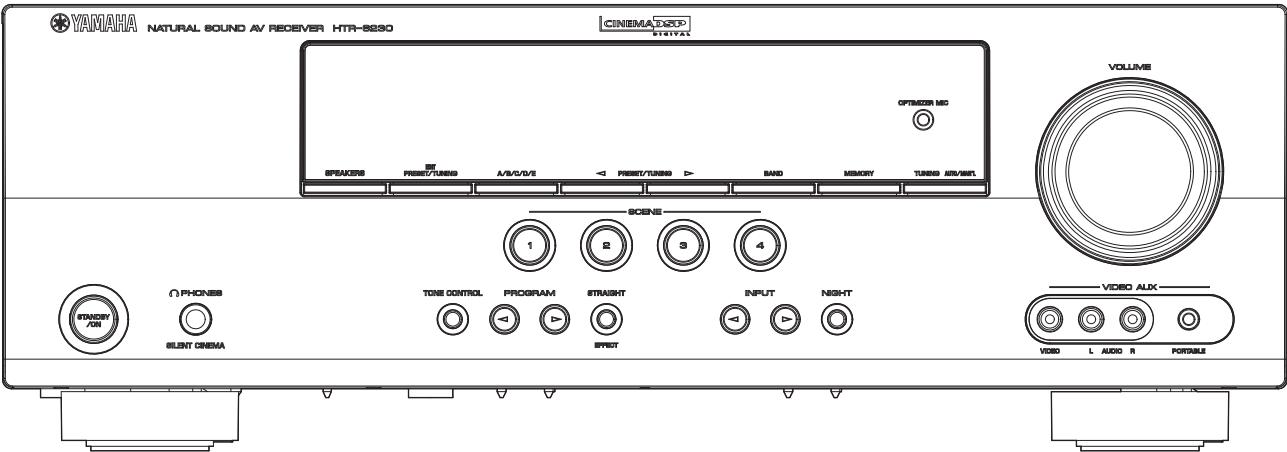
HTR-6230 (U, C models)



HTR-6230 (T model)

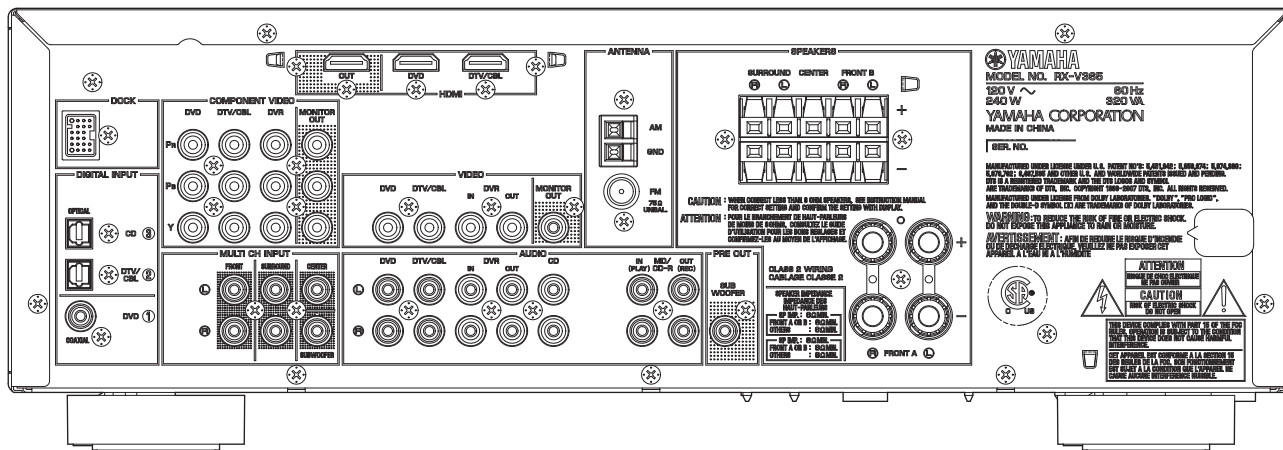


HTR-6230 (R, K, G, E, F models)

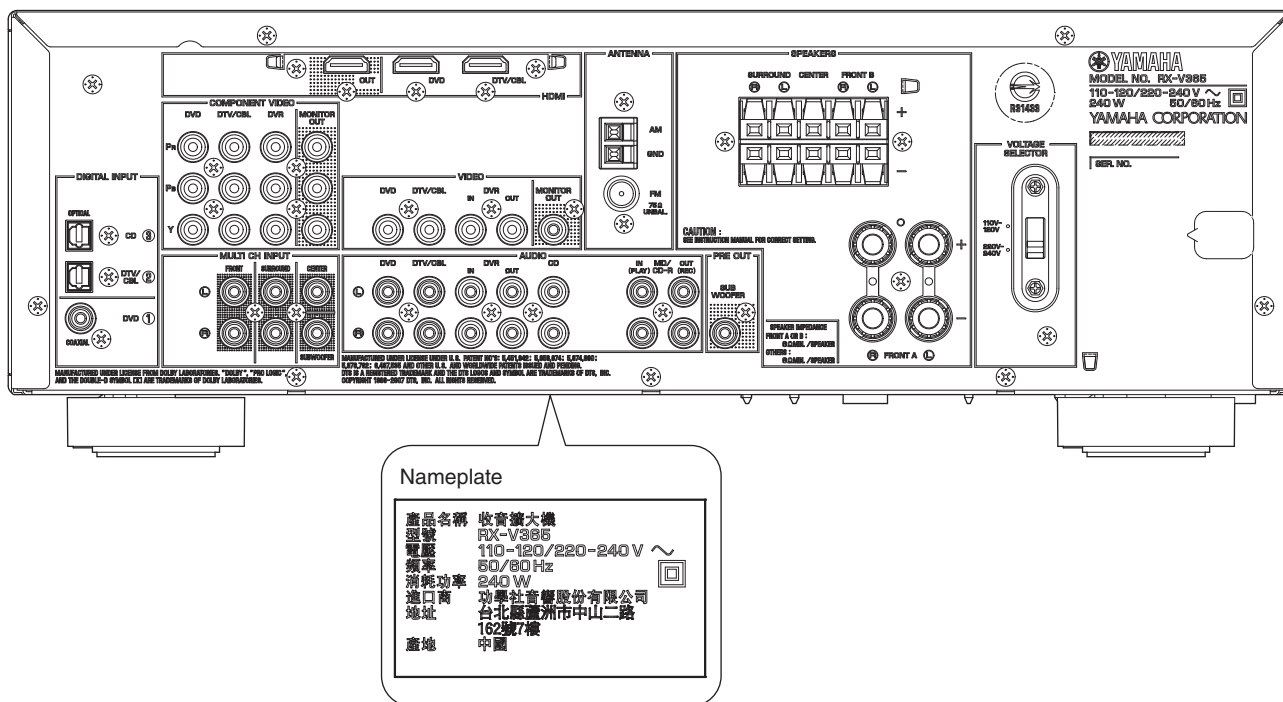


REAR PANELS

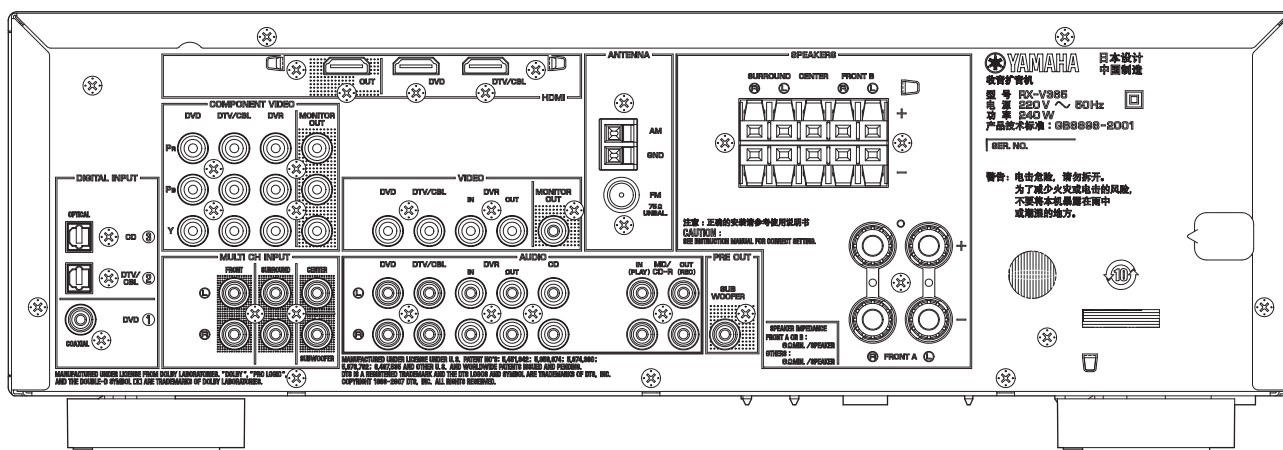
RX-V365 (U, C models)



RX-V365 (R model)

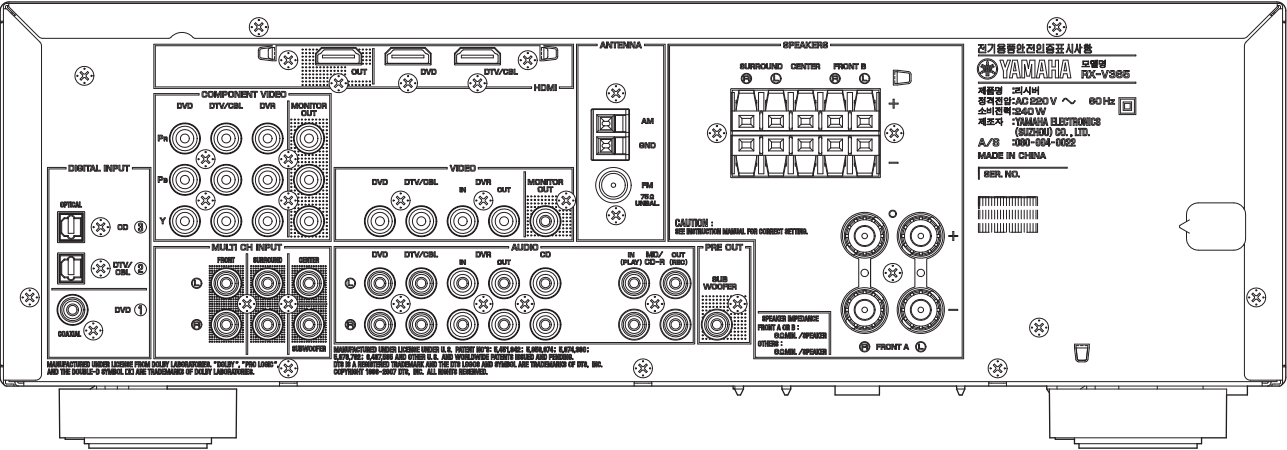


RX-V365 (T model)

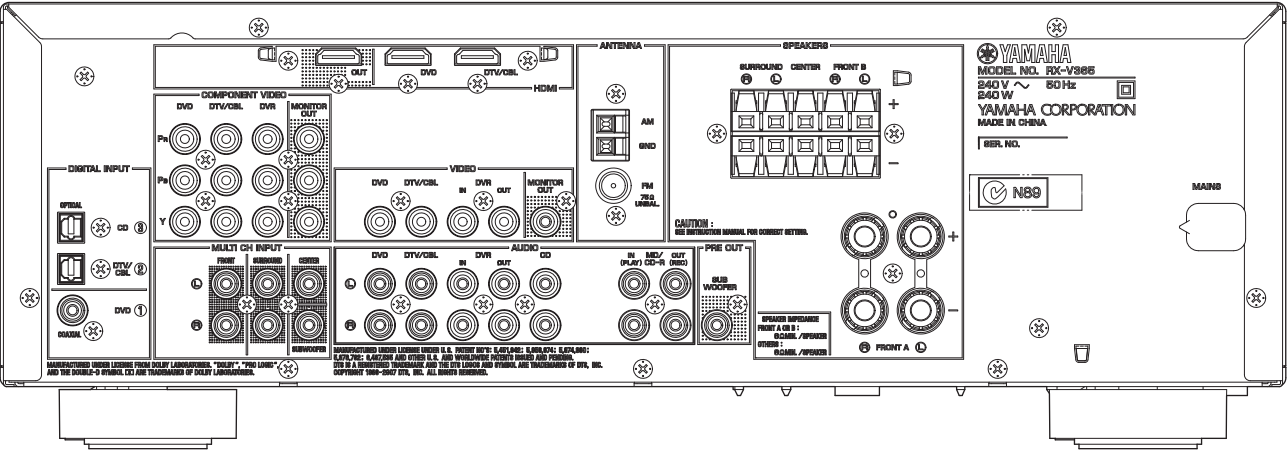


RX-V365/HTR-6230

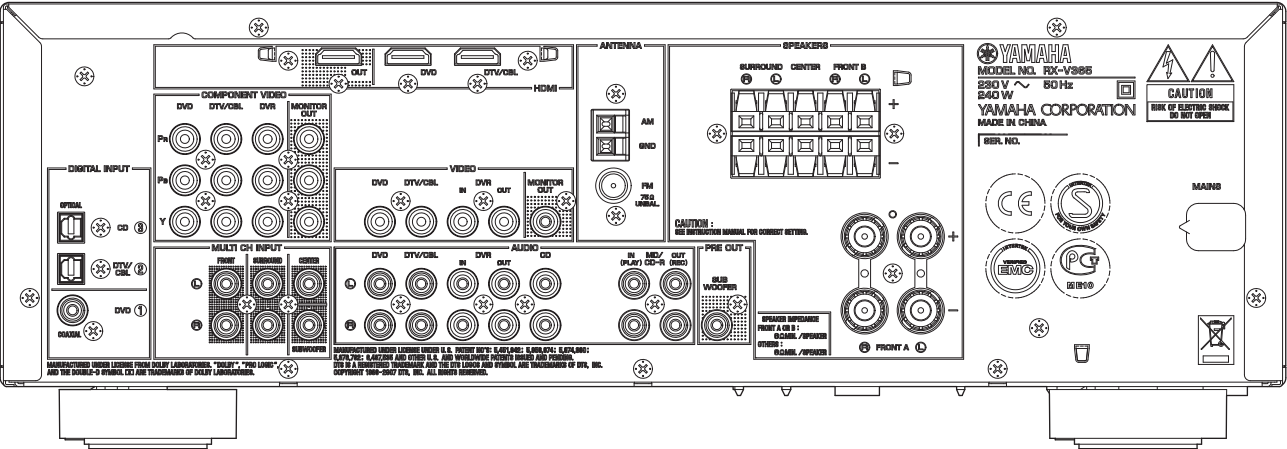
RX-V365 (K model)



RX-V365 (A model)



RX-V365 (B, G, E, F models)



YAMAHA
MODEL NO. RX-V885
 110-120/220-240 V ~
 240 W
 60/50 Hz
YAMAHA CORPORATION

SEE NO.

ANTENNA

SPEAKERS

SURROUND CENTER FRONT B

FRONT A

VOLTAGE SELECTOR

120V ~ 50Hz
 220V ~ 60Hz

DIGITAL INPUT

OPTICAL ③

COAXIAL ②

DTV/CBL ②

DVD ①

COMPONENT VIDEO

DVD DTV/CBL DVR

Pr Pb Y

MONITOR OUT

MULTI CH INPUT

FRONT SURROUND CENTER SUBWOOFER

VIDEO

DVD DTV/CBL IN OUT MONITOR OUT

AUDIO

DVD DTV/CBL IN OUT CD IN REM/PLAY CD-RE OUT SUB WOOFER PIRE OUT

CAUTION :
 SEE INSTRUCTION MANUAL FOR CORRECT RETAIL.

OPTIONAL SPEAKER
 FRONT A OR B :
 6CM/4" / 6000Hz
 CENTER :
 6CM/4" / 6000Hz

MANUFACTURED UNDER LICENSE FROM SONY CORPORATION. "SLOTTED" "PUSH LOCK" AND THE DOUBLE-D SYMBOL ARE TRADEMARKS OF SONY CORPORATION.

[illegible]

REAR PANEL CONNECTIONS

DIGITAL INPUT

- OPTICAL
- COAXIAL
- DTV/CBL
- DVD

COMPONENT VIDEO

- Pr
- Pb
- Y
- DTV/CBL
- DVI
- DVI/CBL
- DVI
- DVI/CBL
- DVI
- DVI/CBL

MULTI CHK INPUT

- FRONT
- CENTER
- SURROUND
- SUBWOOFER

VIDEO

- DVD
- DTV/CBL
- IN
- OUT
- MONITOR OUT

AUDIO

- DVD
- DTV/CBL
- IN
- OUT
- CD
- DOLBY DIGITAL
- DOLBY DIGITAL
- DOLBY DIGITAL

ANTENNA

- AM
- FM
- 75Ω UNBAL

SPEAKERS

- SURROUND
- CENTER
- FRONT B
- FRONT A
- SUBWOOFER

VOLTAGE SELECTOR

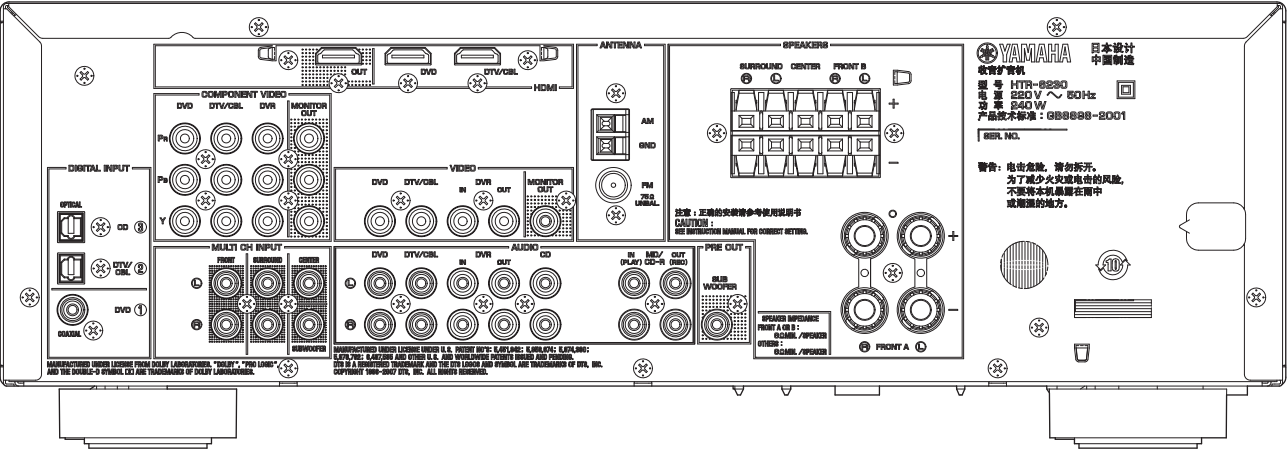
100V
120V
220V
240V

CAUTION:
SEE REVERSE SIDE FOR CORRECT SETTING.

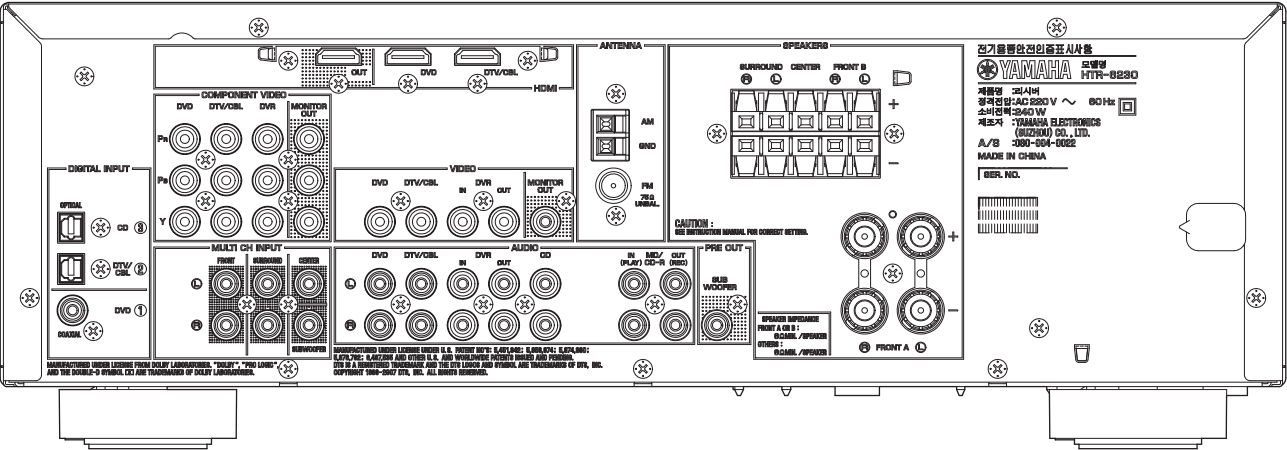
YAMAHA
MODEL NO. HTR-8280
110-120/220-240 V ~
240 W
60/50 Hz
YAMAHA CORPORATION
SER. NO.

NOTES:
1. THE FRONT PANEL CONTROLS ARE LOCATED ON THE FRONT PANEL.
2. THE FRONT PANEL CONTROLS ARE LOCATED ON THE FRONT PANEL.
3. THE FRONT PANEL CONTROLS ARE LOCATED ON THE FRONT PANEL.

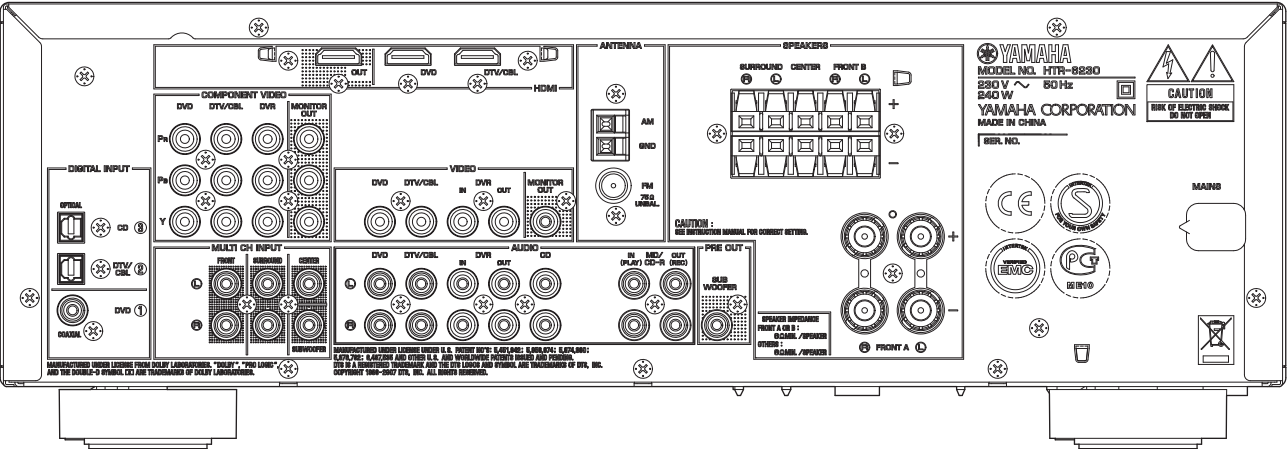
HTR-6230 (T model)



HTR-6230 (K model)



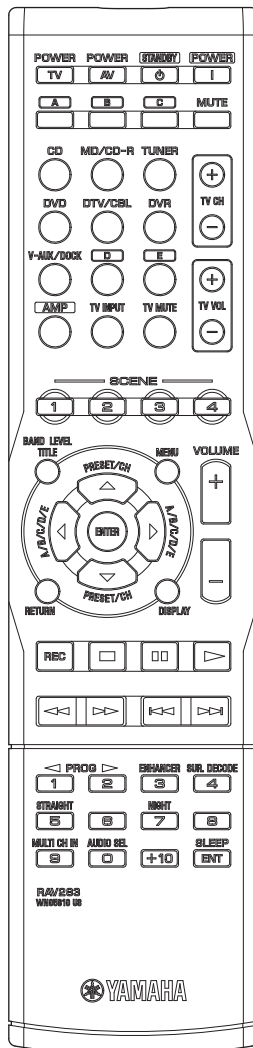
HTR-6230 (G, E, F models)



■ REMOTE CONTROL PANELS

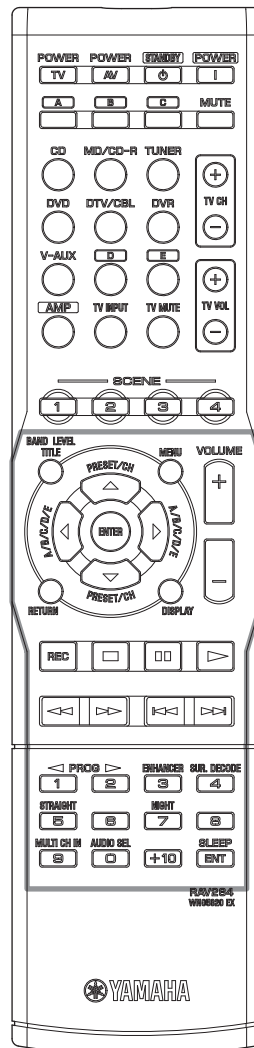
RAV283

(U, C models)

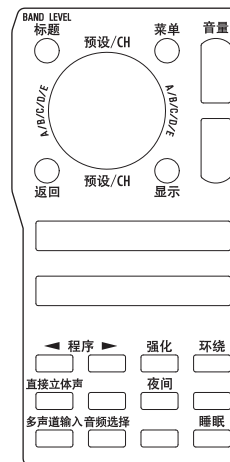


RAV284

(R, T, K, A, L models)

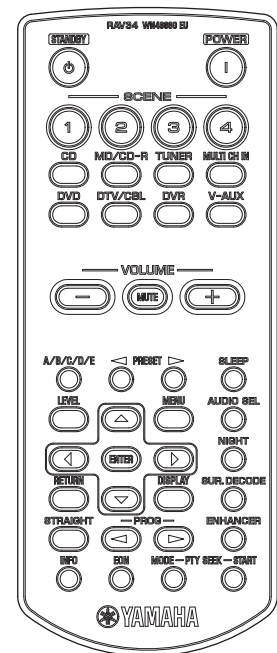


T model



RAV34

(B, G, E, F models)



■ SPECIFICATIONS

■ Audio Section

Minimum RMS Output Power (Power Amp. Section)

(1 kHz, 0.9 % THD)

FRONT L/R, CENTER, SURROUND L/R

U, C models (8 ohms) 100 W/ch

R, T, K, A, B, G, E, F, L models (6 ohms) 100 W/ch

Maximum Power (JEITA) (1 kHz, 10 % THD)

FRONT L/R, CENTER, SURROUND L/R

U, C models (8 ohms) 135 W/ch

R, T, K, A, L models (6 ohms) 135 W/ch

Max. Power Per Channel [B, G, E, F models]

(1 kHz, 0.7 % THD, 4 ohms)

FRONT L/R, CENTER, SURROUND L/R 105 W or more

IEC Power [B, G, E, F models]

(1 kHz, 0.1 % THD, 6 ohms)

MAIN L/R 90 W or more

Dynamic Power Per Channel (IHF) (FRONT L/R)

U, C models

(8/6/4/2 ohms) 110/130/160/180 W

R, T, K, A, B, G, E, F, L models

(6/4/2 ohms) 105/130/150 W

Dynamic Headroom

U, C models (8 ohms) 0.41 dB

Input Sensitivity/Input Impedance

CD, etc. 200 mV / 47 k-ohms

MULTI CH INPUT

FRONT L/R, CENTER, SURROUND L/R, SUBWOOFER

..... 200 mV / 47 k-ohms

Maximum Input Signal (1 kHz, 0.5 % THD, Effect on)

CD, etc. 2.0 V or more

Output Level/Output Impedance

AUDIO OUT (REC) 200 mV / 1.2 k-ohms

SUBWOOFER (2 ch STEREO and FRONT SP: Small)

..... 4 V / 1.2 k-ohms

Headphone Jack Rated Output/Impedance

CD, etc. (1 kHz, 200 mV, 8 ohms) 400 mV / 470 ohms

Frequency Response

(10 Hz to 100 kHz)

CD, etc. to FRONT L/R 0 / -3.0 dB

(10 Hz to 20 kHz)

V-AUX to FRONT L/R 0 / -3.0 dB

Total Harmonic Distortion (1 kHz, 50 W)

CD, etc. (2 ch STEREO) to FRONT L/R SP OUT

U, C models (8 ohms) 0.06 % or less

R, T, K, A, B, G, E, F, L models (6 ohms) 0.06 % or less

Signal to Noise Ratio (IHF-A Network)

CD, etc. (STEREO) (Input shorted) to SP OUT

200 mV 98 dB or more

250 mV 100 dB or more

Residual Noise (IHF-A Network)

FRONT L/R SP OUT 170 μ V or less

Channel Separation

CD, etc. (Input 5.1 k-ohms shorted, 1 kHz / 10 kHz)

..... 60 dB or more / 45 dB or more

Tone Control Characteristics

BASS

Boost/Cut ± 10 dB (100 Hz)

TREBLE

Boost/Cut ± 10 dB (20 kHz)

Filter Characteristics

FRONT, CENTER, SURROUND (H.P.F.)

..... $f_c=40/60/80/90/100/110/120/160/200$ Hz, 12 dB/oct.

SUBWOOFER (L.P.F.)

..... $f_c=40/60/80/90/100/110/120/160/200$ Hz, 24 dB/oct.

■ Video Section

Composite Video Signal Level

..... 1 Vp-p / 75 ohms

Component Signal Level

Y 1 Vp-p / 75 ohms

P_B/P_R 0.7 Vp-p / 75 ohms

Video Maximum Input Level

..... 1.5 Vp-p or more

Signal to Noise Ratio (IHF)

..... 50 dB or more

Monitor Out Frequency Response

Component video signal 5 Hz to 60 MHz, -3 dB

■ FM Section

Tuning Range

U, C models 87.5 to 107.9 MHz

R, L models 87.5 to 108.0 / 87.50 to 108.00 MHz

T, K, A, B, G, E, F models 87.50 to 108.00 MHz

50 dB Quieting Sensitivity (IHF) (1 kHz, 100 % Mod.)

Mono 2.8 μ V (20.2 dBf)

Signal to Noise Ratio (IHF)

Mono / Stereo 73 dB / 70 dB

Harmonic Distortion (1 kHz)

Mono / Stereo 0.5 % / 0.5 %

Antenna Input 75 ohms unbalanced

■ AM Section

Tuning Range

U, C models 530 to 1,710 kHz

R, L models 530 to 1,710 / 531 to 1,611 kHz

T, K, A, B, G, E, F models 531 to 1,611 kHz

Antenna Input Loop antenna

■ General

Power Supply

U, C models	AC 120 V, 60 Hz
R, L models	AC 110-120/220-240 V, 50/60 Hz
T model	AC 220 V, 50 Hz
K model	AC 220 V, 60 Hz
A model	AC 240 V, 50 Hz
B, G, E, F models	AC 230 V, 50 Hz

Power Consumption

U, C models	240 W / 320 VA
R, T, K, A, B, G, E, F, L models	240 W

Standby Power Consumption (reference data)

U, C, T, K, A, B, G, E, F models	0.8 W
----------------------------------	-------

Maximum Power Consumption (5 ch drive, 10 % THD)

R, L models	530 W
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Dimensions (W x H x D)

	435 x 151 x 317.6 mm (17-1/8" x 5-7/8" x 12-1/2")
--	---

Weight

	8.0 kg (17.6 lbs.)
--	--------------------

Finish

[RX-V365]	
Gold color	T model
Black color	U, C, R, T, K, A, B, G, E, F, L models
Silver color	R, A, G, E, F models
Titanium color	R, K, G, E, F, L models
[HTR-6230]	
Gold color	T model
Black color	U, C, T, K, G, E, F models
Silver color	U, R, G, E, F models

Accessories	Remote control x 1
	Batteries (R03, AAA, UM-4) x 2
	Indoor FM antenna x 1
	AM loop antenna x 1
	Optimizer microphone x 1 (R, K, A, B, G, E, F, L models)
	Sheet x 1 (T model)

* Specifications are subject to change without notice due to product improvements.

U.....U.S.A. model
C.....Canadian model
R.....General model
T.....Chinese model
K.....Korean model
A.....Australian model

B.....British model
G.....European model
E.....South European model
F.....Russian model
L.....Singapore model



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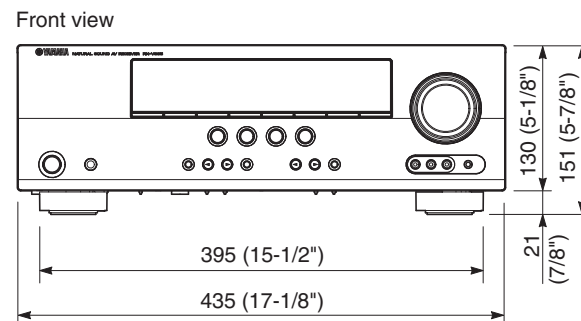
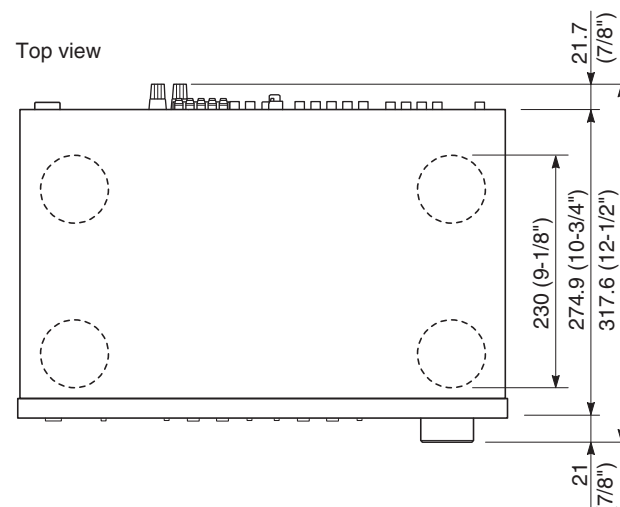
HDMI

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SILENT™ CINEMA

"SILENT CINEMA" is a trademark of Yamaha Corporation.

• DIMENSIONS



Unit: mm (inch)

• SCENE TEMPLATE

SCENE name	Contents		Source	Program		NIGHT	Select (Default)	
				Mode	Sub-mode	Mode	U, C models	R, T, K, A, B, G, E, F, L models
DVD Viewing	DVD	Movie	DVD	STRAIGHT	–	SYSTEM	O (SCENE 1)	O
DVD Movie Viewing			DVD	MOVIE	Movie Dramatic	SYSTEM	O	O (SCENE 1)
DVD Live Viewing		Music Live	DVD	MUSIC	Pop/Rock	SYSTEM	O	O
DVR Viewing	DVR		DVR	MOVIE	Movie Dramatic	SYSTEM	O	O
Music Disc Listening	DVD-Audio/ SA-CD	Music Disc	DVD	STEREO	2ch Stereo	SYSTEM	O	O (SCENE 2)
Disc Listening			DVD	STEREO	5ch Stereo	SYSTEM	O (SCENE 2)	O
CD Listening	CD	Music Disc	CD	STEREO	5ch Stereo	SYSTEM	O	O
CD Music Listening			CD	STEREO	2ch Stereo	SYSTEM	O	O
Radio Listening	TUNER/ RADIO	FM/AM	FM/AM (TUNER)	MUSIC ENHANCER	Music Enh. 5ch	SYSTEM	O (SCENE 4)	O (SCENE 4)
DOCK Listening	DAP	iPod	DOCK (V-AUX)	MUSIC ENHANCER	Music Enh. 5ch	SYSTEM	O	–
		Bluetooth						
TV Viewing	TV		DTV/CBL	STRAIGHT	–	SYSTEM	O (SCENE 3)	O (SCENE 3)
TV Sports Viewing			DTV/CBL	ENTERTAINMENT	TV Sports	SYSTEM	O	O
Game Playing	GAME		V-AUX	ENTERTAINMENT	Game	SYSTEM	O	O

• SOUND/SURROUND SELECT MENU

Sound Field Parameters

		DSP LEVEL MIN, [MID], MAX	MUSIC ENHANCER LOW, [HIGH]
STEREO	2ch Stereo		
	5ch Stereo		
MUSIC	Pop/Rock	O	
	Hall	O	
	Jazz	O	
ENTERTAIN	Game	O	
	TV Sports	O	
MOVIE	Movie Spacious	O	
	Movie Dramatic	O	
ENHANCER	Music Enh. 2ch		O
	Music Enh. 5ch		O

Surround Decoders

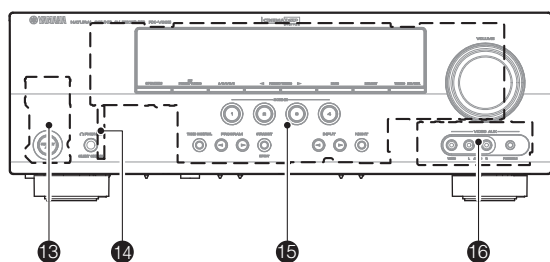
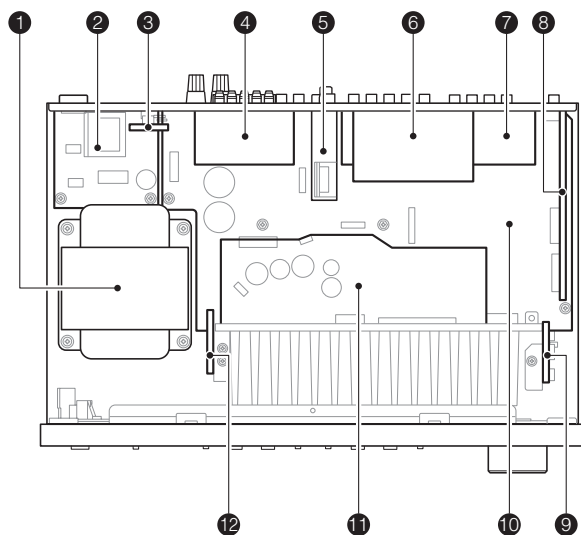
		PANORAMA ON, [OFF]	DIMENSION -3, [STD], +3	CENTER WIDTH 0, 1, 2, [3], 4, 5, 6, 7
DECODING FORMAT	Dolby Digital			
	DTS			
POST DECODING FORMAT	Dolby Pro Logic			
	Dolby Pro Logic II Music	O	O	O
	Dolby Pro Logic II Movie			
	Dolby Pro Logic II Game			

• SET MENU TABLE

CATEGORY	MAIN MENU	SUB MENU	SELECT MENU	VALUE [INITIAL]
BASIC SETUP (U, C, T models)			ROOM : M	S / [M] / L
			SUBWOOFER : YES	[YES] / NONE
			SPEAKERS : 5 spk	2 spk / 3 spk / 4 spk / [5 spk]
			SET / [CANCEL]	
			CHECK : Test Tone	
			CHECK OK?	[YES] / NO
		SPEAKER LEVEL	FL :	-10 to +10 dB, [0 dB], 1 dB step
			FR :	
			C :	
			SL :	
			SR :	
SWFR :				
AUTO SETUP (R, K, A, B, G, E, F, L models)	Use this feature to automatically adjust speaker and system parameters.			
MANUAL SETUP	1 SOUND MENU	A) SPEAKER SET	FRONT B : FRONT	[FRONT] / ZONE B
			FRONT : LARGE	[LARGE] / SMALL
			CENTER : SML	NONE / [SML] / LRG
			SUR. L/R : SML	NONE / [SML] / LRG
			BASS OUT : BOTH	SWFR / FRNT / [BOTH]
			CROSSOVER : 80 Hz	40 / 60 / [80] / 90 / 100 / 110 / 120 / 160 / 200 Hz
			SWFR PHASE : NRM	[NRM] / REV
		B) SP LEVEL	FL :	-10 to +10 dB, [0 dB], 1 dB step
			FR :	
			C :	
			SL :	
			SR :	
			SWFR :	
		C) SP DISTANCE	UNIT : feet	feet (ft) / meters (m)
			FRONT L : 10.0 ft	feet : 1.0 to 80.0 ft, [10.0 ft], 0.5 ft step
			FRONT R : 10.0 ft	
			CENTER : 8.5 ft	feet : 1.0 to 80.0 ft, [8.5 ft], 0.5 ft step
			SUR. L : 8.0 ft	feet : 1.0 to 80.0 ft, [8.0 ft], 0.5 ft step
			SUR. R : 8.0 ft	
			SWFR : 10.0 ft	feet : 1.0 to 80.0 ft, [10.0 ft], 0.5 ft step
			FRONT L : 3.00 m	meters : 0.30 to 24.00 m, [3.00 m], 0.10 m step
			FRONT R : 3.00 m	
			CENTER : 2.60 m	meters : 0.30 to 24.00 m, [2.60 m], 0.10 m step
			SUR. L : 2.40 m	meters : 0.30 to 24.00 m, [2.40 m], 0.10 m step
			SUR. R : 2.40 m	
			SWFR : 3.00 m	meters : 0.30 to 24.00 m, [3.00 m], 0.10 m step
		D) CENTER GEQ	TEST : > OFF ON	[OFF] / ON
			100 Hz : - - - -	-6.0 to +6.0 dB, [0 dB], 0.5 dB step
			300 Hz : - - - -	
			1 kHz : - - - -	
			3 kHz : - - - -	
			10 kHz : - - - -	
		E) LFE LEVEL	SP LFE : 0 dB	-20 to 0 dB, [0 dB], 1 dB step
			HP LFE : 0 dB	
		F) D. RANGE	SP D. R. : MAX	MIN / STD / [MAX]
			HP D. R. : MAX	
		G) AUDIO SET	MUTE TYP : FULL	[FULL] / -20 dB
			A. DELAY : 0 ms	0 to 160 ms, [0 ms], 1 ms step
			MAX VOL. : +16 dB	+16 dB / +10 to -30 dB, [+16 dB], 5 dB step
			INI. VOL. : OFF	OFF / -80 to +16 dB, [OFF], 1 dB step

CATEGORY	MAIN MENU	SUB MENU	SELECT MENU	VALUE [INITIAL]
	2 INPUT MENU	A) INPUT ASSIGN	IN (1) [COAXIAL] : DVD	CD / MD/CD-R / [DVD] / DTV/CBL / V-AUX / DVR
			IN (2) [OPTICAL] : DTV/CBL	CD / MD/CD-R / DVD / [DTV/CBL] / V-AUX / DVR
			IN (3) [OPTICAL] : CD	[CD] / MD/CD-R / DVD / DTV/CBL / V-AUX / DVR
		B) INPUT RENAME		CD / MD/CD-R / DVD / DTV/CBL / V-AUX / DVR Input is possible to 8 characters Input possible Character type: Capital: A to Z, Small: a to z, Figure: 0 to 9, Space, Marks: # * + , - . / : < > ?
		C) VOLUME TRIM		CD / TUNER / MD/CD-R / DVD / DTV/CBL / V-AUX (DOCK: U, C models) /DVR / MULTI CH INPUT -6.0 to +6.0 dB, [0.0 dB], 1.0 dB step
		D) DECODER MODE		[AUTO] / LAST
			CD / DVD / DTV/CBL	[AUTO] / DTS
		E) MULTI CH SET		[LAST] / DVR / V-AUX / DTV/CBL / DVD
	3 OPTION MENU	A) DISPLAY SET	DIMMER : 0	-4 to 0, [0], 1 step
		B) MEMORY GUARD	MEM. GUARD : OFF	[OFF] / ON
		C) AUDIO SELECT	> AUTO LAST	[AUTO] / LAST
		D) PARAM. INI		[NO] / YES
		E) BLUETOOTH (U, C models)		START PAIRING
SIGNAL INFO	1 FORMAT (Signal format)		Analog / PCM / Dolby Digital / DTS / Digital / --- / ???	
	2 SAMPLING		xxx kHz	
	3 CHANNEL		2/0/--- / 3/2/0.1 / 1+1/0/--- / ---/---	
	4 BITRATE (Bit rate)		xxx kbps	
	5 FLAG		DTS / Dolby Digital / PCM / None	

■ INTERNAL VIEW



- ❶ POWER TRANSFORMER
- ❷ OPERATION (3) P.C.B.
- ❸ OPERATION (5) P.C.B. (R, L models)
- ❹ MAIN (3) P.C.B.
- ❺ AM/FM TUNER
- ❻ HDMI P.C.B.
- ❼ OPERATION (4) P.C.B.
- ❽ DSP P.C.B.
- ❾ MAIN (4) P.C.B.
- ❿ MAIN (1) P.C.B.
- ⓫ OPERATION (2) P.C.B.
- ⓬ OPERATION (11) P.C.B.
- ⓭ OPERATION (10) P.C.B.
- ⓮ OPERATION (6) P.C.B.
- ⓯ OPERATION (1) P.C.B.
- ⓰ OPERATION (7) P.C.B.

■ DISASSEMBLY PROCEDURES

(Remove parts in the order as numbered.)

Disconnect the power cable from the AC outlet.

1. Removal of Top Cover

- Remove 4 screws (①), 4 screws (②) and screw (③). (Fig. 1)
- Slide the top cover rearward to remove it. (Fig. 1)

2. Removal of Front Panel Unit

- Remove 6 screws (④). (Fig. 1)
- Remove CB191 (R, K, A, B, G, E, F, L models), CB192, CB261 and CB408. (Fig. 1)
- Unlock and remove CB235. (Fig. 1)
- Release hook and then remove the front panel unit. (Fig. 1)

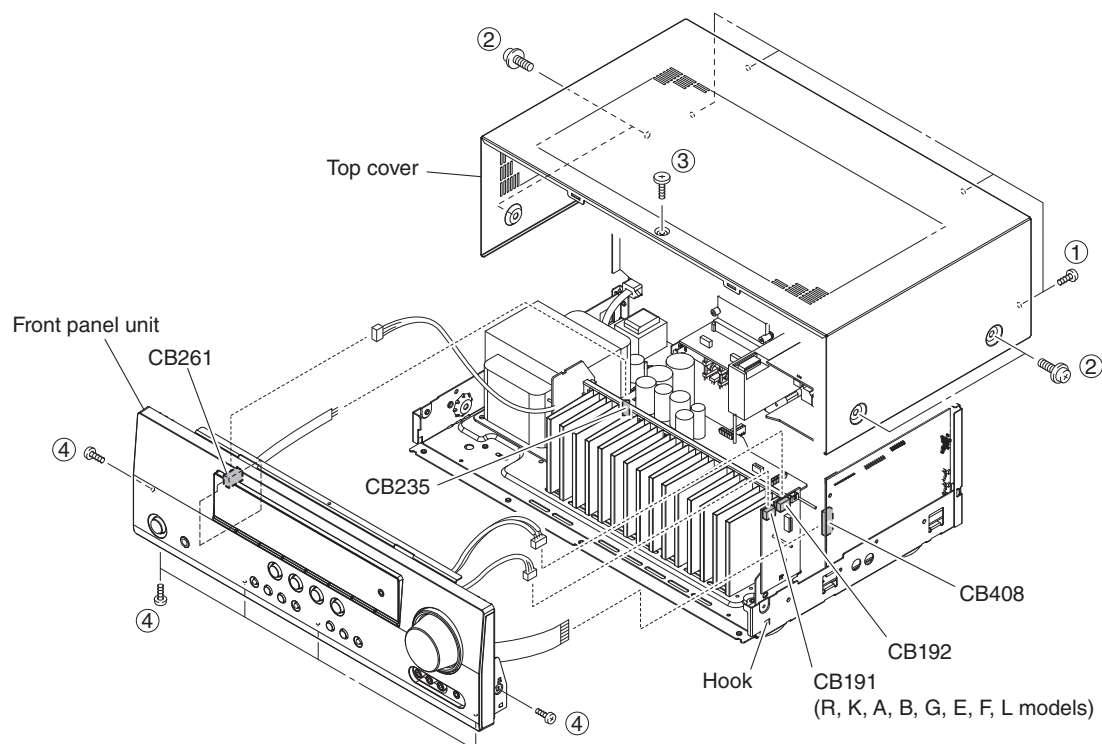


Fig. 1

3. Removal of HDMI P.C.B.

- Remove CB904 and CB905. (Fig. 2)
- Remove 5 screws (⑤). (Fig. 3)
- Remove the HDMI P.C.B.. (Fig. 2)

4. Removal of OPERATION (4) P.C.B.

- Remove CB181–182 and CB193. (Fig. 2)
- Remove 7 screws (⑥). (Fig. 3)
- Remove the OPERATION (4) P.C.B.. (Fig. 2)

5. Removal of DSP P.C.B.

- Remove 18 screws (⑦), 3 screws (⑧) and 2 screws (⑨) (R, L models). (Fig. 3)
- Remove the cord stopper. (Fig. 2)
- Remove the rear panel. (Fig. 2)
- Remove screw (⑩). (Fig. 2)
- Remove CB512 and CB516. (Fig. 2)
- Remove the DSP P.C.B. which is connected directly to the MAIN (1) P.C.B. with board-to-board connectors. (Fig. 2)

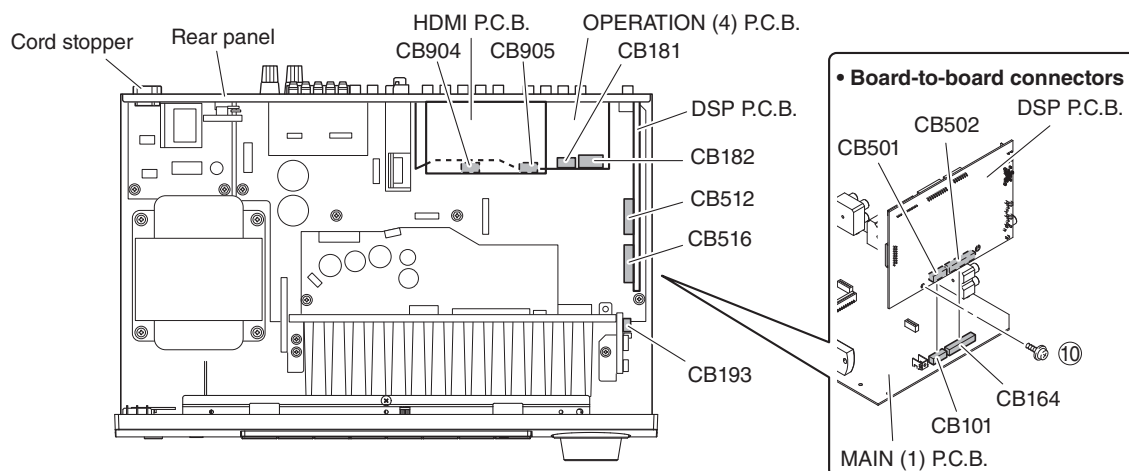


Fig. 2

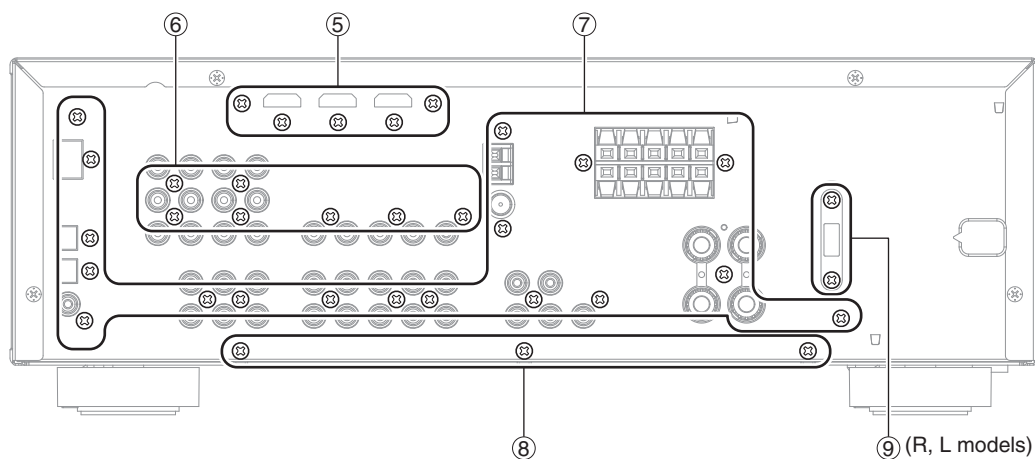


Fig. 3

When checking the P.C.B.

- Remove the top cover. (Fig. 1)
 - Remove 3 screws (⑧). (Fig. 3)
 - Remove 5 screws (⑪) and 4 screws (⑫). (Fig. 4)
 - Place the P.C.B.s (with rear panel) upright. (Fig. 5)
 - Connect the ground of heat sink, rear panel and MAIN (1) P.C.B. (G103, G104, G105 and ST101) to the chassis with a ground lead or the like. (Fig. 5)
- Use the extension cable for connection for the following connectors. (Fig. 6)
 DSP P.C.B. CB408 – OPERATION (1) P.C.B. CB202: MF117350 (17P, 350mm)

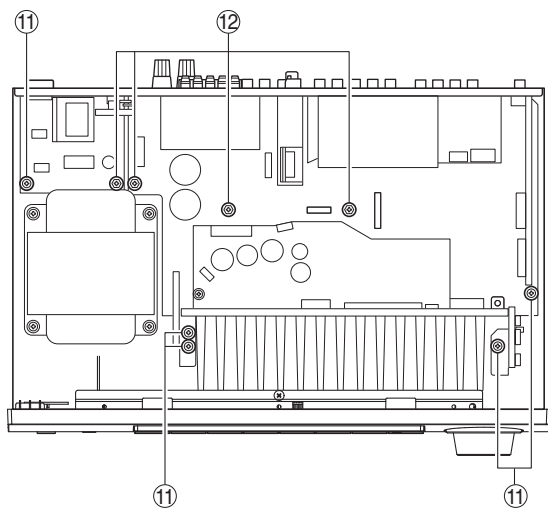


Fig. 4

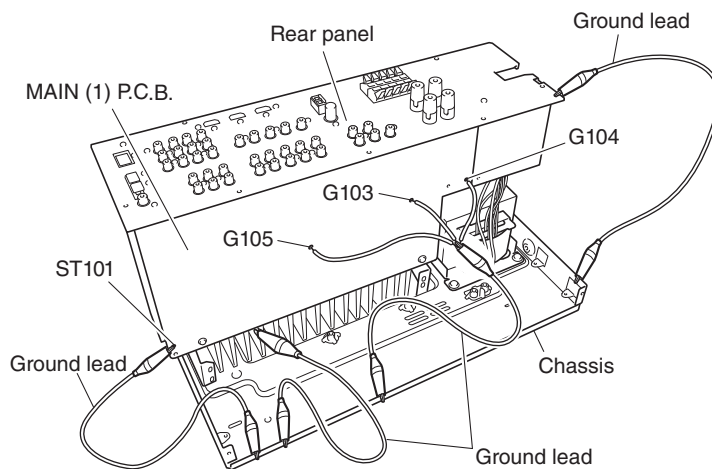


Fig. 5

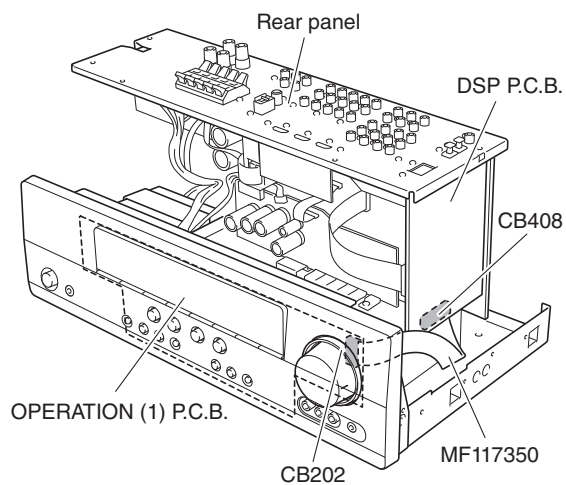


Fig. 6

■ UPDATING FIRMWARE

After replacing the following parts, be sure to write the latest firmware.

- DSP P.C.B.
- IC201 (DSP P.C.B.)

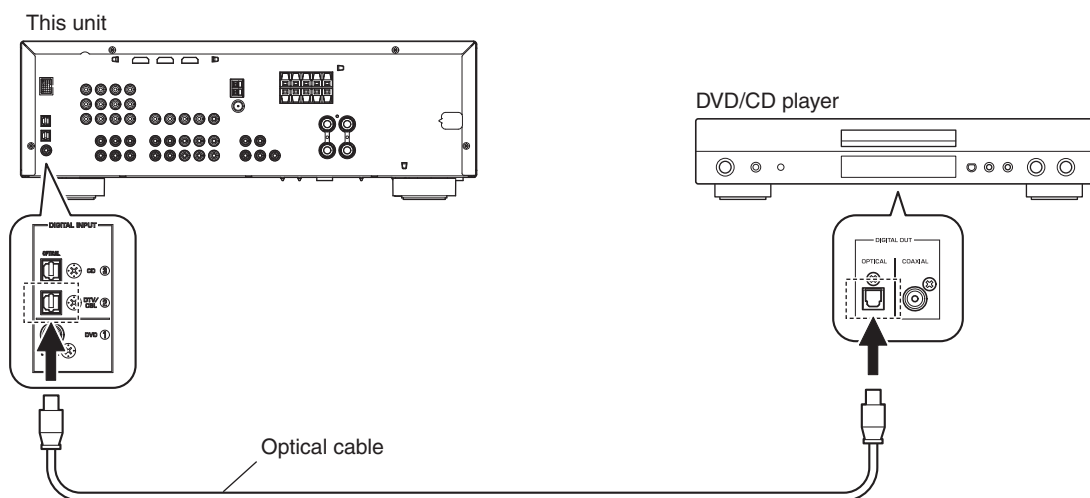
● Required tools

- DVD or CD player (with DIGITAL OUTPUT (OPTICAL or COAXIAL) jack)
- Optical cable (when OPTICAL jack is used)
- Digital audio pin cable (when COAXIAL jack is used)
- Firmware CD
 - * To make the firmware CD, download the latest firmware from the specified download source to PC.

● Connection

Connect this unit and DVD/CD player as shown below. (Fig. 1)

Example of connection between digital OPTICAL jacks



Example of connection between digital COAXIAL jacks

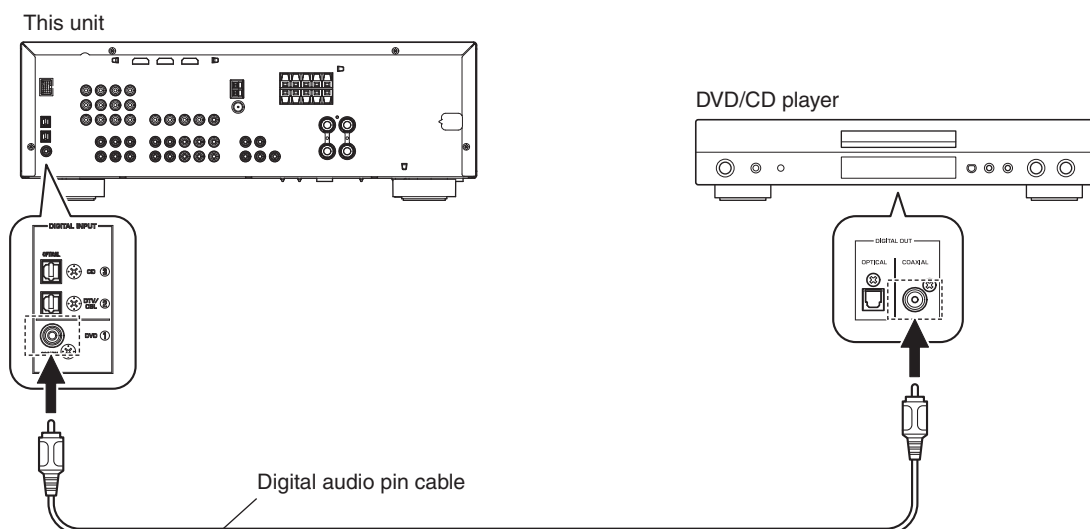


Fig. 1

● Confirmation of firmware version and checksum

Before and after writing the firmware, check the firmware version and checksum value by using the self-diagnostic function menu "14. ROM VER/SUM".

For more information, refer to "SELF-DIAGNOSTIC FUNCTION".

Have the firmware version and checksum displayed by using sub-menu, and note down them.

● Operation procedures

1. While pressing the "STANDBY/ON" and "SPEAKERS" keys of this unit, connect the power cable of this unit to the AC outlet. (Fig. 2)

The FIRMWARE UPDATE mode is activated and "SPDIF Upgrade" is displayed. (Fig. 2)

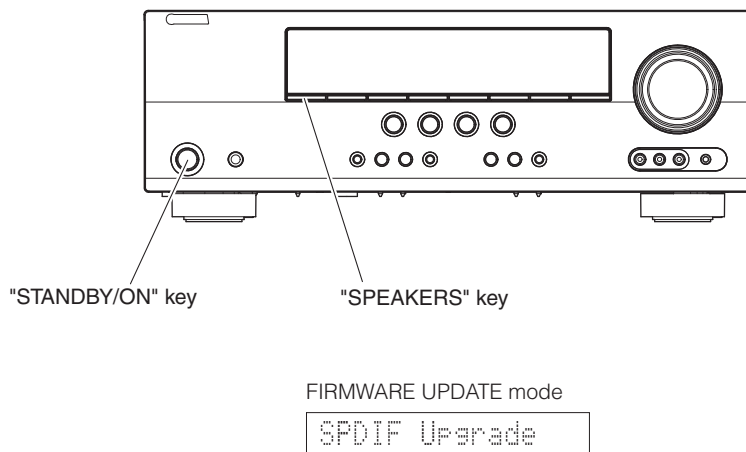


Fig. 2

2. Connect the power cable of DVD/CD player to the AC outlet.
3. Press the "STANDBY/ON" key of the DVD/CD player to turn on the power.
4. Press the "EJECT" key of the DVD/CD player to open the disc tray.
5. Place the firmware CD in the disc tray and close the disc tray.
6. Press the "PLAY" key of the DVD/CD player, then writing of the firmware is started. (Fig. 3)
7. When writing of the firmware is completed, "Upgrade OK", "Please..." and "Turn off!!" are displayed repeatedly. (Fig. 3)

Writing is started.

Address:XXXXXX

XXXXXX: Address information of the received data

Writing is completed.

Upgrade OK

Please...

Turn off!!

Fig. 3

- * When the version of the firmware to be written is the same as the one existing in this unit, "Same Version", "Please..." and "Turn off!!" are displayed repeatedly. (Upgrading is not necessary.)

If the display remains unchanged for longer than 10 seconds after starting the firmware CD play procedure, perform the firmware CD play procedure again from the beginning.

If "FILE CORRUPTED" is displayed after "Address:XXXXXX", make sure that the firmware CD is not corrupted and perform steps 1 to 7 of "Operation Procedures" again.

If "Upgrade Failed" is displayed, perform Steps 1 to 7 of "Operation Procedures" again.

- Press the "STOP" key of the DVD/CD player.
- Press the "EJECT" key of the DVD/CD player to open the disc tray.
- Remove the firmware CD from the disc tray and close the disc tray.
- Press the "STANDBY/ON" key of the DVD/CD player to turn off the power.
- Press the "STANDBY/ON" key of this unit to turn off the power.
- Start up the self-diagnostic function mode of this unit and select "14. ROM VER/SUM" menu.
Have the firmware version and checksum displayed by using sub-menu, and then check that they are the same as written ones.
 - * When the displayed firmware version and checksum are different from written ones, perform the "Operation Procedures" all over again.
- Press the "STANDBY/ON" key of this unit to turn off the power.

● Initializing of this unit

- * After updating the firmware, be sure to initialize this unit.
- Start up the self-diagnostic function mode and select "13. FACTORY PRESET" menu.
 - Select the "PRESET RSRV" menu.

PRESET INHIBIT (Initialization inhibited)

13. PRESET INHI



PRESET RESERVED (Initialization reserved)

13. PRESET RSRV

- Press the "STANDBY/ON" key of this unit to turn off the power.

■ SELF-DIAGNOSTIC FUNCTION

This unit has self-diagnostic functions that are intended for inspection, measurement and location of faulty point.

There are 14 main menu items, each of which has sub-menu items.

Listed in the table below are menu items and sub-menu items.

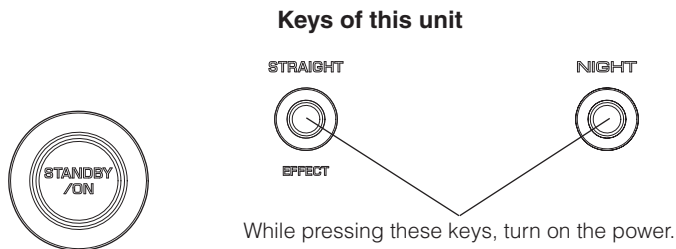
Note that not all menu items listed will apply to the models covered in this service manual.

No.	Main menu	Sub-menu
1	BYPASS	ANALOG BYPASS
		DSP BYPASS
2	AUDIO CHECK	AUDIO CHECK
		MUTE ALL
		MUTE SYSTEM IC
		MUTE TRANSISTOR
3	SPEAKERS SET	FRNT : SML 0dB
		CENTER : NONE
		LFE/B : FRNT
		TONE : MAX
		TONE : MIN
4	6CH-INPUT	6ch INPUT 6-ohm
		6ch INPUT 8-ohm
		LIM : , PLDET : , THM :
5	MIC CHECK	MIC CHECK
6	FL CHECK	VFD CHECK
		VFD DISP OFF
		VFD DISP ALL
		VFD DIMMER
		CHECK PATTERN
7	TEST TONE	TEST ALL
		TEST FRONT L
		TEST CENTER
		TEST FRONT R
		TEST SURR R
		TEST SURR L
		TEST LFE
8	PROTECTION	PRD L : xxx
		PRD H : xxx
		PRV L : xxx
		PRV H : xxx
		THM : xxx
		PLDET8_L : xxx
		PLDET8_H : xxx
		PLDET6_L : xxx
		PLDET6_H : xxx
		PRI : xxx
		PDET : xxx

No.	Main menu	Sub-menu
9	AD DATA CHECK	PD : xxx PV : xxx
		TH : xxx PL : xxx
		PI : xxx DE : xxx
		K0 : xxx K1 : xxx
10	PROTECTION HISTORY	History 1
		History 2
		History 3
		History 4
11	DOCK	DOCK : xxx
		DOCK ignore
		BTYS : xxx
		BT CLR/RSRV
12	NO MENU (Not applied to these models.)	
13	FACTORY PRESET	PRESET INHI
		PRESET RSRV
14	ROM VER/SUM	TOTAL VERSION
		CRC14 ALL program
		CRC16 application & standby (Main program CRC16)
		CRC16 SPI F/W update code
		CRC16 S/PDIF/ F/W update code
		FLASH ROM Read/Write check
		SDRAM Read/Write check
		EEPROM Read/Write check

● Starting Self-Diagnostic Function

While pressing those 2 keys of this unit as shown in the figure below, press the “STANDBY/ON” key to turn on the power.



While pressing these keys, turn on the power.

● Starting Self-Diagnostic Function in the protection cancel mode

If the protection function works and causes hindrance to trouble shoot, cancel the protection function as described below, and it will be possible to enter the self-diagnostic function mode.

While pressing those 2 keys as shown in the figure above, press the “STANDBY/ON” key to turn on the power and keep pressing those 2 keys for 3 seconds or longer.

The self-diagnostic function mode is activated with the protection functions disabled.

In this mode, the “SLEEP” segment of the FL display of this unit flashes to indicate that the mode is self-diagnostic function mode with the protection functions disabled.

CAUTION!

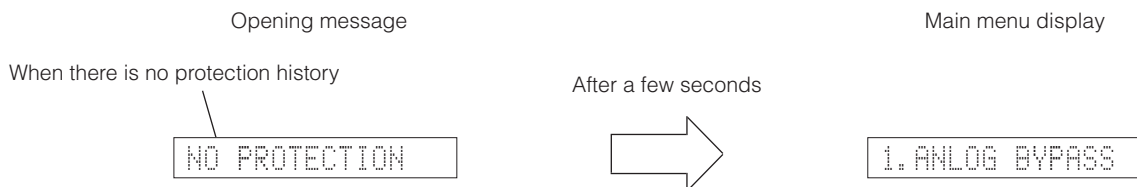
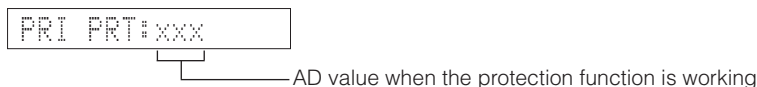
Using this product with the protection function disabled may cause further damage to this unit. Use special care for this point when using this mode.

● Canceling Self-Diagnostic Function

1. Before canceling self-diagnostic function, execute setting for FACTORY PRESET of main menu No.13 (Memory initialization inhibited or Memory initialized).
 - * In order to keep the user memory stored, be sure to select PRESET INHIBITED (Memory initialization inhibited).
2. Press the “STANDBY/ON” key of this unit to turn off the power.

● Display provided when Self-Diagnostic Function started

The FL display of this unit displays the protection function history data then the main menu (sub-menu ANALOG BYPASS of main menu No. 1 BYPASS) a few seconds later.

When there is no history of protection function:**When there is a history of protection function due to excess current:**

Cause: An excessive current flowed through the power amplifier.

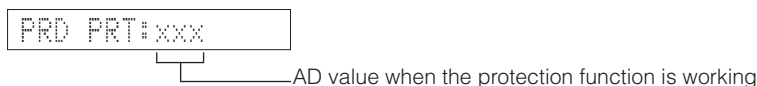
Supplementary information:

As current of the power amplifier is detected, the abnormal channel can be identified by checking the current detect transistor.

Turning on the power without correcting the abnormality will cause the protection function to work immediately and the power supply will instantly be shut off.

Notes)

- Applying the power to this unit without correcting the abnormality can be dangerous and cause additional circuit damage. To avoid this, if "PRI" and "PRD" protection function has been activated 3 times continuously, the power will not turn on even when the "STANDBY/ON" key is pressed. In order to turn on the power again, disconnect the power cable of this unit from the AC outlet once and then reconnect it again.
- The output transistors in each amplifier channel should be checked for damage before applying power to this unit.
- Amplifier current should be monitored by measuring DC voltage across the emitter resistors for each channel.

When there is a history of protection function due to abnormal DC output

Cause: DC output of the power amplifier is abnormal.

Supplementary information:

The protection function worked due to a DC voltage appearing at the speaker terminal.

A cause could be a defect in the amplifier.

If the power is turned on with the abnormality unsolved, the protection function works in about 3 seconds to turn off the power.

When there is a history of protection function due to abnormal voltage in the power supply section

PRV PRT:xxx

AD value when the protection function is working

Cause: The voltage in the power supply section is abnormal.**Supplementary information:**

The protection function worked due to a defect or overload in the power supply.

If the power is turned on with the abnormality unsolved, the protection function works in about 1 second to turn off the power.

When there is a history of protection function due to excessive heat sink temperature

THM PRT:xxx

AD value when the protection function is working

Cause: The temperature of the heat sink is excessive.**Supplementary information:**

The protection function worked due to the temperature limit being exceeded.

Causes could be poor ventilation or a defect related to the thermal sensor.

If the power is turned on with the abnormality unsolved, the protection function works in about 1 second to turn off the power.

For detection of each protection function, refer to main menu described later.

History of protection function

When the protection function has worked, its history is stored in memory with a backup.

Even if no abnormality is noted while servicing the unit, an abnormality which has occurred previously can be defined as long as the backup data has been stored.

The history of the protection function is cleared when self-diagnostic function is cancelled by selecting PRESET RE-SERVED (Memory initialized) of main menu No. 13 or when the backup data is erased.

● Operation procedure of Main menu and Sub-menu

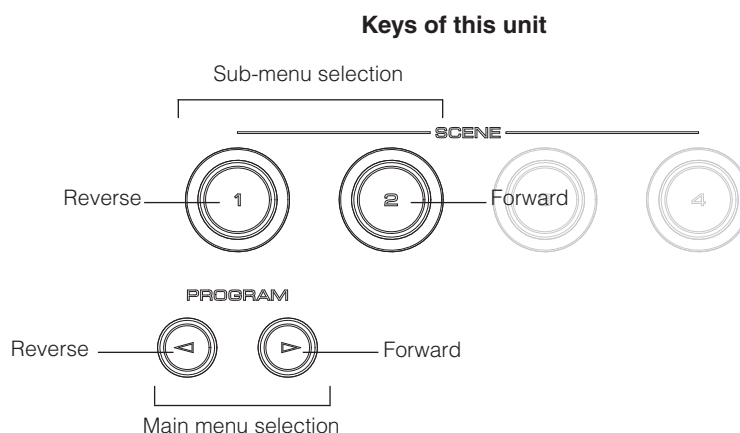
There are 14 menu items, each of them having sub-menu items.

Main menu selection:

Select the menu using ">" (forward) and "<" (reverse) keys of PROGRAM.

Sub-menu selection:

Select the sub-menu using "SCENE 2" (forward) and "SCENE 1" (Reverse) keys.



● Functions in Self-Diagnostic Function mode

In addition to the self-diagnostic function menu items, functions as listed below are available.

- Power on/off
- Master volume
- Muting
- Speakers A/B/OFF
- Input selection
- Tone control

* Functions related to the tuner and the set menu are not available.

● Initial settings used to start Self-Diagnostic Function

The following initial settings are used when starting self-diagnostic function.

When self-diagnostic function is canceled, these settings are restored to those before starting self-diagnostic function.

- Master volume: -20 dB
- Input: DVD (MULTI CHANNEL INPUT OFF)
- Effect level: 0 dB
- Main menu: 1. ANALOG BYPASS

● Details of Self-Diagnostic Function menu

1. BYPASS

Using the sub-menu, it is possible to select ANALOG BYPASS output or DSP BYPASS output.

ANALOG BYPASS

The analog input audio signal is output to FRONT L/R with EFFECT OFF.

1. ANALOG BYPASS

INPUT: DVD ANALOG

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
		FRONT	CENTER	SURROUND	
Both ch, -20 dBm	+6.0 dB	+11.5 dBm	-∞	-∞	-∞

DSP BYPASS

The digital input audio signal is output to FRONT L/R with EFFECT OFF.

1. DSP BYPASS

INPUT: DVD ANALOG

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
		FRONT	CENTER	SURROUND	
Both ch, -20 dBm	+6.0 dB	+11.5 dBm	-∞	-∞	-∞

2. AUDIO CHECK

The input audio signal is output.

* When the input audio signal is 2 ch L/R, it is distributed as follows when output.

L ch: FRONT L, CENTER, SURROUND L, LFE (L ch +10 dB)

R ch: FRONT R, SURROUND R

2. AUDIO CHECK

INPUT: DVD ANALOG

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
		FRONT	CENTER	SURROUND	
Both ch, -20 dBm	+6.0 dB	+11.5 dBm	+11.5 dBm	+11.5 dBm	0 dBm

MUTE ALL

The audio signals of all channels are muted by System IC (MAIN P.C.B.) and Transistor (Q5008-5011 MAIN P.C.B.).

2. MUTE ALL

MUTE SYSTEM IC

The audio signals of all channels are muted by System IC (MAIN P.C.B.).

2. MUTE SYS IC

MUTE TRANSISTOR

The audio signals of all channels are muted by Transistor (Q5008-5011 MAIN P.C.B.).

2. MUTE TR

3. SPEAKER SET

The analog switch settings for each sub-menu are as shown in the table below.

	FRONT	CENTER	SURROUND	SUBWOOFER
FRONT : SML 0dB	SMALL	LARGE	LARGE	SWFR
CENTER : NONE	LARGE	NONE	LARGE	SWFR
LFE/B : FRNT	LARGE	SMALL	SMALL	FRONT
TONE : MAX	LARGE	LARGE	LARGE	SWFR
TONE : MIN	LARGE	LARGE	LARGE	SWFR

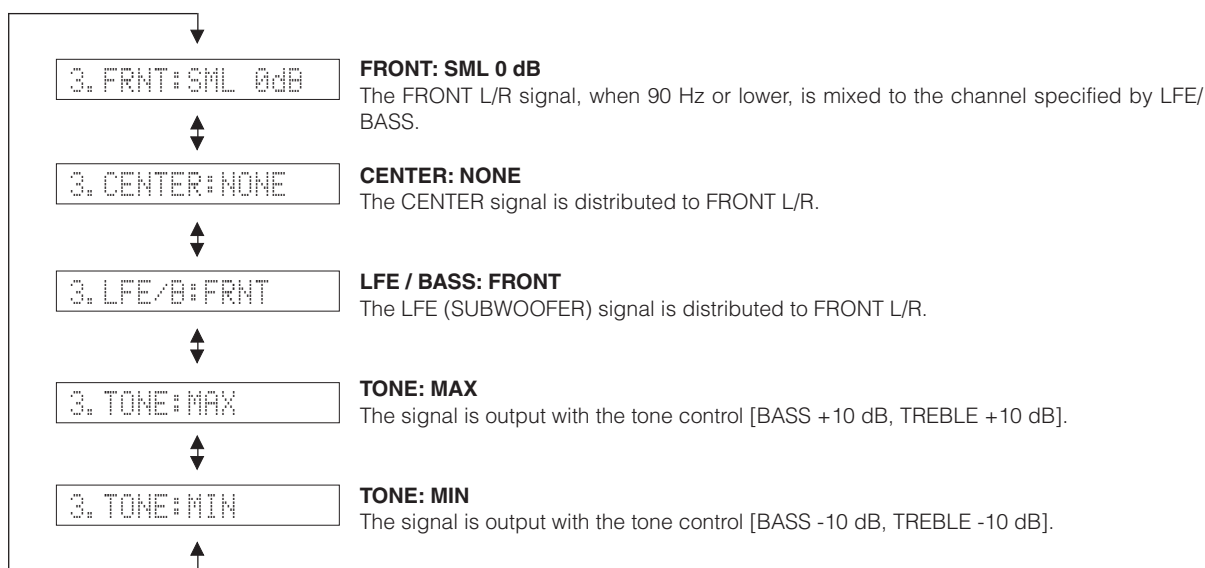
LARGE: This mode is used for a speaker with high bass reproduction performance (a large unit). Full bandwidth signals are output.

SMALL: This mode is used for a speaker with low bass reproduction performance (a small unit). The signals of 90 Hz or less are mixed into the channel specified by LFE/BASS.

NONE: This mode is used for no center speaker. The center content is reduced by 3 dB and distributed to FRONT L/R.

SWFR: LFE of 5.1 ch signal or LFE/BASS lower than 90 Hz is output through SUBWOOFER OUT.

FRONT: LFE of 5.1 ch signal or LFE/BASS lower than 90 Hz is distributed to FRONT L/R.



INPUT: DVD ANALOG

SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Sub-menu	Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
			FRONT	CENTER	SURROUND	
FRONT : SML 0dB	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	-∞	-∞	-3.5 dBm
CENTER : NONE	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	-∞	-∞	-∞
LFE/B : FRNT	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	-∞	-∞	-∞
TONE : MAX	Both ch, -20 dBm	+6.0 dB	+14.5 dBm	-∞	-∞	-∞
TONE : MIN	Both ch, -20 dBm	+6.0 dB	+8.5 dBm	-∞	-∞	-∞

4. 6CH INPUT

The input source [MULTI CHANNEL INPUT] is selected.
It is possible to select the 6-ohm/8-ohm by using the sub-menu.

6 ch INPUT 6-ohm

4.6ch INPUT 6Ω

INPUT: MULTI CH INPUT
SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Sub-menu	Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
			FRONT	CENTER	SURROUND	
6 ch INPUT 6-ohm	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	+11.5 dBm	+11.5 dBm	-3.5 dBm

6 ch INPUT 8-ohm

4.6ch INPUT 8Ω

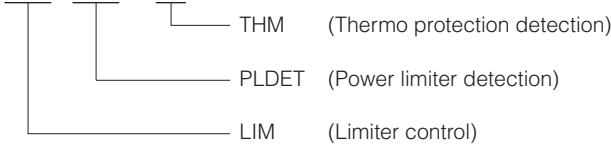
INPUT: MULTI CH INPUT
SPEAKER OUT: 1 kHz, SUBWOOFER OUTPUT: 50 Hz

Sub-menu	Input level	Volume	SPEAKER OUT			SUBWOOFER OUTPUT
			FRONT	CENTER	SURROUND	
6 ch INPUT 8-ohm	Both ch, -20 dBm	+6.0 dB	+11.5 dBm	+11.5 dBm	+11.5 dBm	-3.5 dBm

LIM/PLDET/THM

- LIM:** Setting value of LIM (Limiter control)
* Do not change the setting value because this item is only for the use of development staff.
- PLDET:** Power limiter detection
The A/D conversion value during operation is displayed.
- THM:** Thermo protection detection
The A/D conversion value during operation is displayed.
(Reference voltage: 3.3 V=255)

4.255:255: 64



5. MIC CHECK (R, K, A, B, G, E, F, L models)

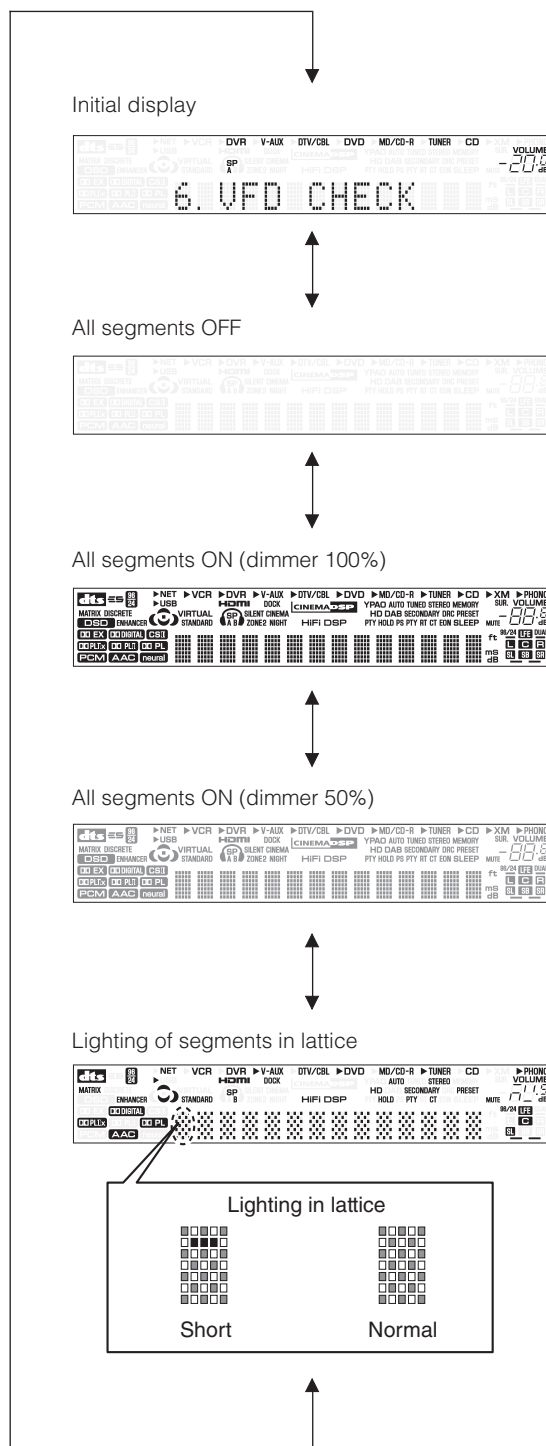
The signals input through the microphone are output via A/D and D/A.

5.MIC CHECK

6. FL CHECK

This menu is used to check the FL display section.
The audio signal is processed using STRAIGHT.

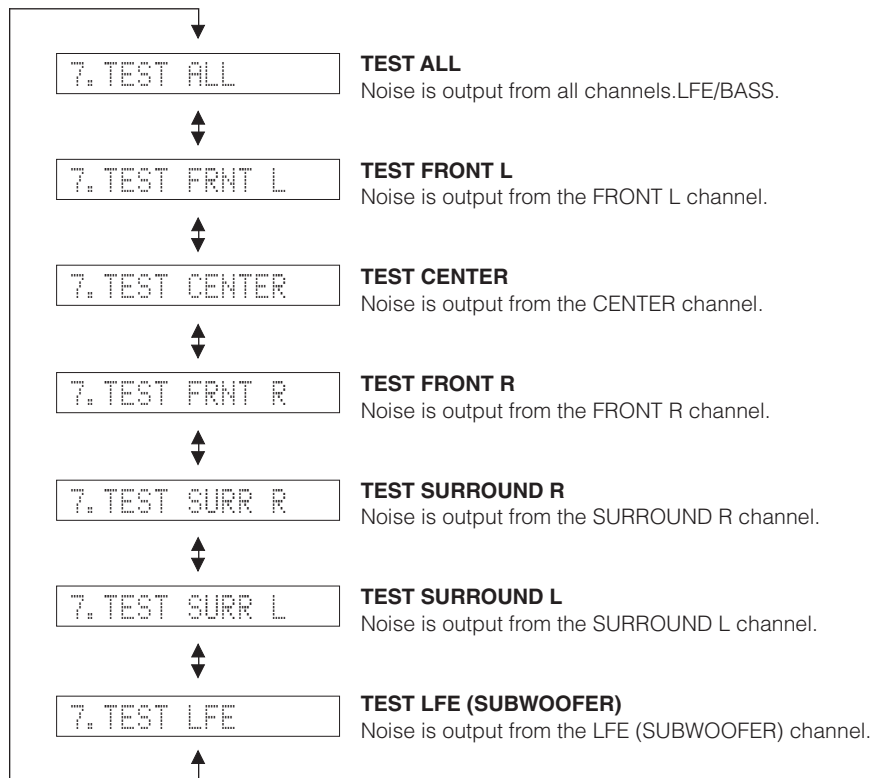
Checking FL display section



Segment conditions of the FL driver and the FL tube are checked by turning ON and OFF all segments. Next, the operation of the FL driver is checked by using the dimmer control. Then a short between segments next to each other is checked by turning ON and OFF all segments alternately (in lattice). (In the above example, the segments in the second row from the top are shorted.)

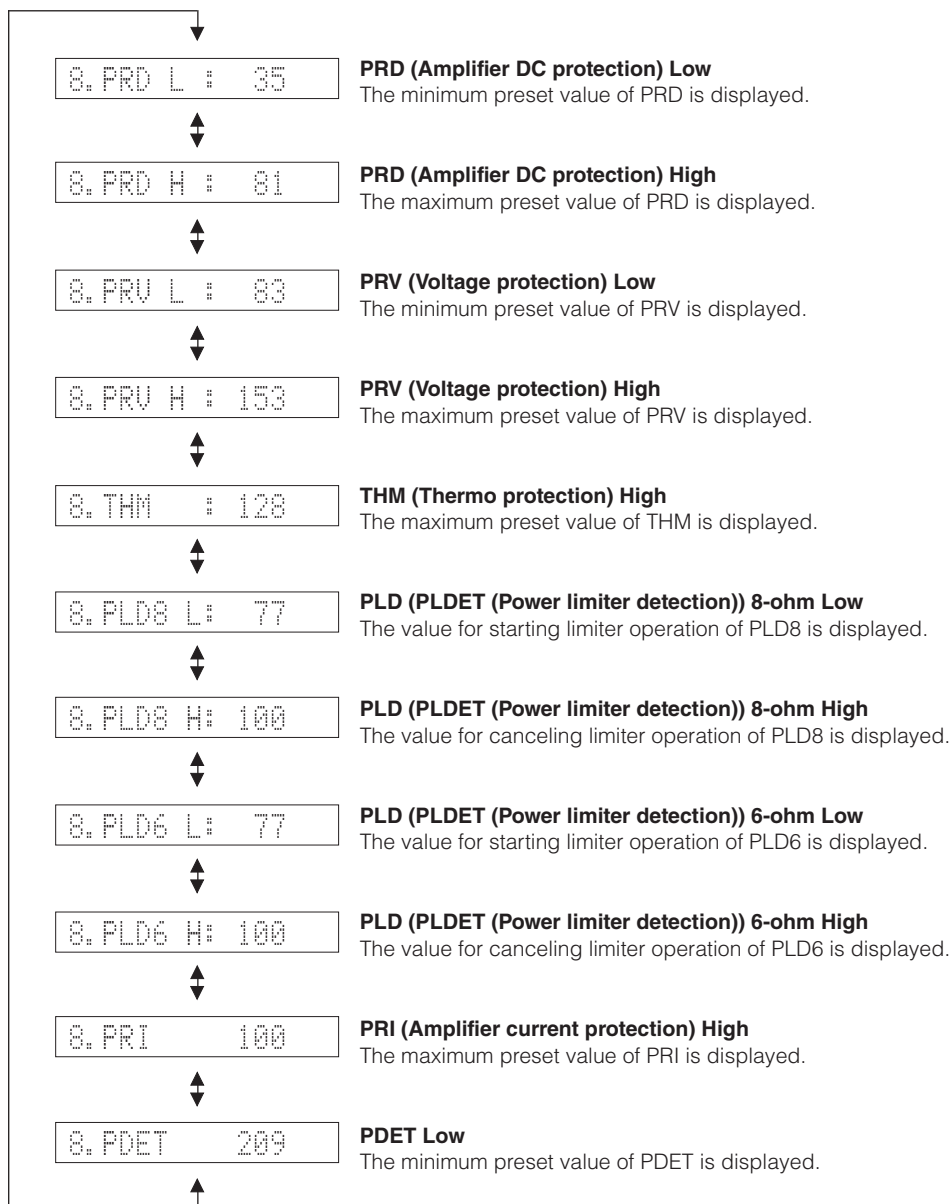
7. TEST TONE

The noise generator with a built-in DSP outputs the test noise through the channels specified by the sub-menu. The noise frequency for LFE (SUBWOOFER) is 35 to 80 Hz. Other than that, the noise frequency is 500 to 2 kHz.



8. PROTECTION

The A/D setting value of each protection is displayed.
(Reference voltage: 3.3 V=255)



9. A/D DATA CHECK

This menu is used to display the A/D conversion value of the microprocessor which detects panel keys of this unit and protection functions by using the sub-menu.

When K0/K1 menu is selected, keys become non-operable due to detection of the values of all keys.

However, it is possible to advance to the next sub-menu by turning the VOLUME of this unit. When using this function, note that turning the VOLUME more than 1 click would cause the volume value to change.

Signal processing is maintained in the status before execution.

* The figures in the diagram are given as reference only.

PD/PV

PD: PRD (Power amplifier DC protection detection)
The output of power amplifier DC (DC voltage) is detected.
Normal value: 35 to 81 (Reference voltage: 3.3 V=255)

PV: PRV (Voltage protection detection)
Voltage detects: ACL, AC2, 10V, S9, +12, -12, +5V and VP
Normal value: 84 to 153 (Reference voltage: 3.3 V=255)

* If PRD and PRV becomes out of the normal value range, the protection function works to turn off the power.

PD: 58 PV:114

TH/PL

TH: THM (Thermo protection detection)
The temperature of the heat sink is detected.
Normal value: 0 to 124 (Reference voltage: 3.3 V=255)

* If THM becomes out of the normal value range, the protection function works to turn off the power.

PL: PLDET (Power limiter detection)
The output voltage of power amplifier is detected.

TH: 68 PL:255

U, C models (Reference voltage: 3.3 V=255)

	During normal operation	Value for starting limiter operation	Value for canceling limiter operation
PLDET	255	77	100
LIM H: 255 / L: 102	H	L	H

(LIM: Limiter control)

R, T, K, A, B, G, E, F, L models (Reference voltage: 3.3 V=255)

	During normal operation	Value for starting limiter operation	Value for canceling limiter operation
PLDET	255	100	131
LIM H: 255 / L: 90	H	L	H

(LIM: Limiter control)

PI/DE

PI: PRI (Current protection detection)
The current of the power amplifier is detected.
Normal value: 0 to 100 (Reference voltage: 3.3 V=255)

DE: PDET (Sub-trans power detection)
Normal value: 209 to 255 (Reference voltage: 3.3 V=255)

* If PRI and PDET becomes out of the normal value range, the protection function works to turn off the power.

PI: 6 DE:255

K0/K1**K0/K1:** KEY0/KEY1 (Panel key of this unit)

When the A/D conversion value of the panel key becomes out of the specified range (standard value ± 4), normal operation will not be available.

In that case, check the constant of partial pressure resistor, solder condition, etc. with referring to the table below.

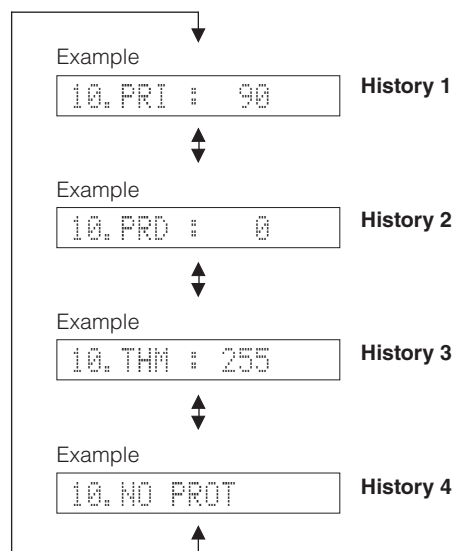
(Reference voltage: 3.3 V=255)

K0:255 K1:255

Display	KEY0	KEY1
23 $\pm$ 4	SCENE 1	SCENE 3
42 $\pm$ 4	SCENE 2	SCENE 4
66 $\pm$ 4	PROGRAM <	NIGHT
92 $\pm$ 4	PROGRAM >	–
120 $\pm$ 4	STRAIGHT	INPUT <
147 $\pm$ 4	tone CONTROL	INPUT >
165 $\pm$ 4	PRESET/TUNING	PRESET/TUNING <
182 $\pm$ 4	BAND	PRESET/TUNING >
198 $\pm$ 4	A/B/C/D/E	MEMORY
217 $\pm$ 4	SPEAKERS	TUNING
255	(KEY OFF)	(KEY OFF)

10. PROTECTION HISTORY

The history of protection function is displayed.

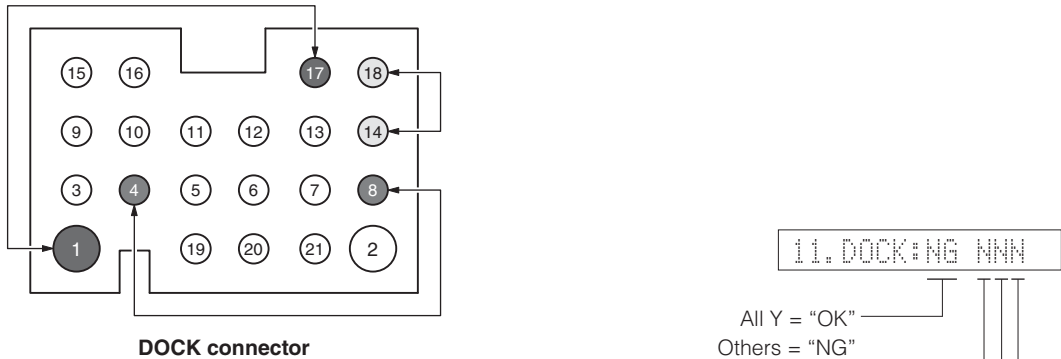


11. DOCK (U, C models)

DOCK check

This menu is used to check the DOCK connector without the iPod itself.
With the power to this unit turned off, short between pins No. 14 (TX) and No. 18 (RX), between pins No. 1 (PWR) and No. 17 (ACCPW) and between pins No. 4 (iPDET) and No. 8 (DGND) of the DOCK connector. (Make sure that the power is turned off when shorting pins.)
Start up the self-diagnostic function and select this menu.
The check result is displayed according to the following display specifications.

Note) Be sure to return the shorted pins to their original condition after executing this test.



Check item	Result		Display
UART loop back test	OK		Y
	NG		N
iPAP (iPod accessory power) detection	IC402 pin No. 1	High	Y
		Low	N
iPDET (iPod installation to DOCK) detection	IC402 pin No. 12	Low (iPod universal dock)	Y
		High (Bluetooth adapter)	N

DOCK ignore

When DOCK and iPod are connected, the input source [DOCK (iPod)] is made ineffective and [V-AUX] is selected.

11.DOCK IGNORE

Bluetooth version

When the Bluetooth DOCK is connected, the firmware version of that Bluetooth module is displayed.

11.BTVS:.....

Clear Bluetooth pairing information

While the Bluetooth DOCK is connected, initialization of the Bluetooth DOCK pairing information is inhibited/reserved. Use "PRESET/TUNING<" and "PRESET TUNING>" keys for operation.

Initialization inhibited

11. BT CLR: INHI



Initialization reserved

14. BT CLR: RSRV

Initialization inhibited

User memory initialization is not executed. Select this sub-menu to protect the user memory.

Initialization reserved

Initialization of the use memory is reserved. (Actually, initialization is executed the next time that the power is turned on.)

Select this sub-menu to initialize the Bluetooth DOCK pairing information.

12. NO MENU

12.

13. FACTORY PRESET

This menu is used to reserve and inhibit initialization of the back-up IC.

The signals are processed using EFFECT OFF (The L/R signal is output using ANALOG BYPASS).

13. PRESET INHI



13. PRESET RSRV

PRESET INHIBIT (Initialization inhibited)

Back-up IC initialization is not executed. Select this sub-menu to protect the values set by the user.

PRESET RESERVED (Initialization reserved)

Initialization of the back-up IC is reserved. (Actually, initialization is executed the next time that the power is turned on.)

Select this sub-menu to reset to the original factory settings or to reset the IC. Any protection history will be cleared.

CAUTION: Before setting to the PRESET RESERVED, write down the existing preset memory content of the tuner in a table as shown below.

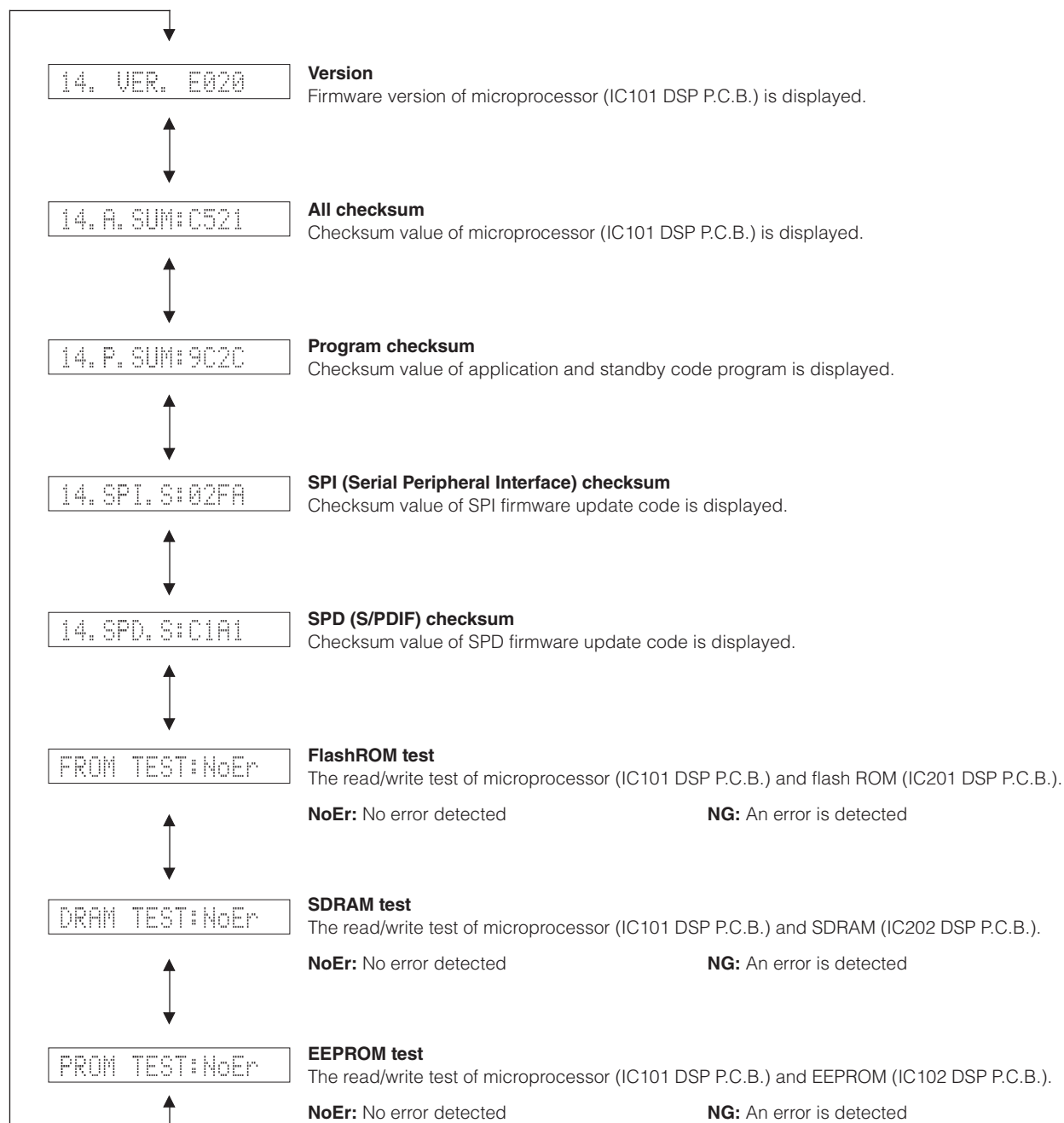
(This is because setting to the PRESET RESERVED will cause the user memory content of the tuner to be erased.)

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

14. ROM VER/SUM

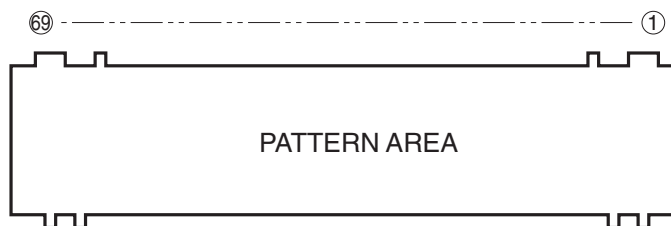
The firmware version and checksum values are displayed.

The checksum is obtained by adding the data at every 8 bits for each program area and expressing the result as a 4 figure hexadecimal data.



■ DISPLAY DATA

● V2001 : 17-BT-29GNK (OPERATION P.C.B.)



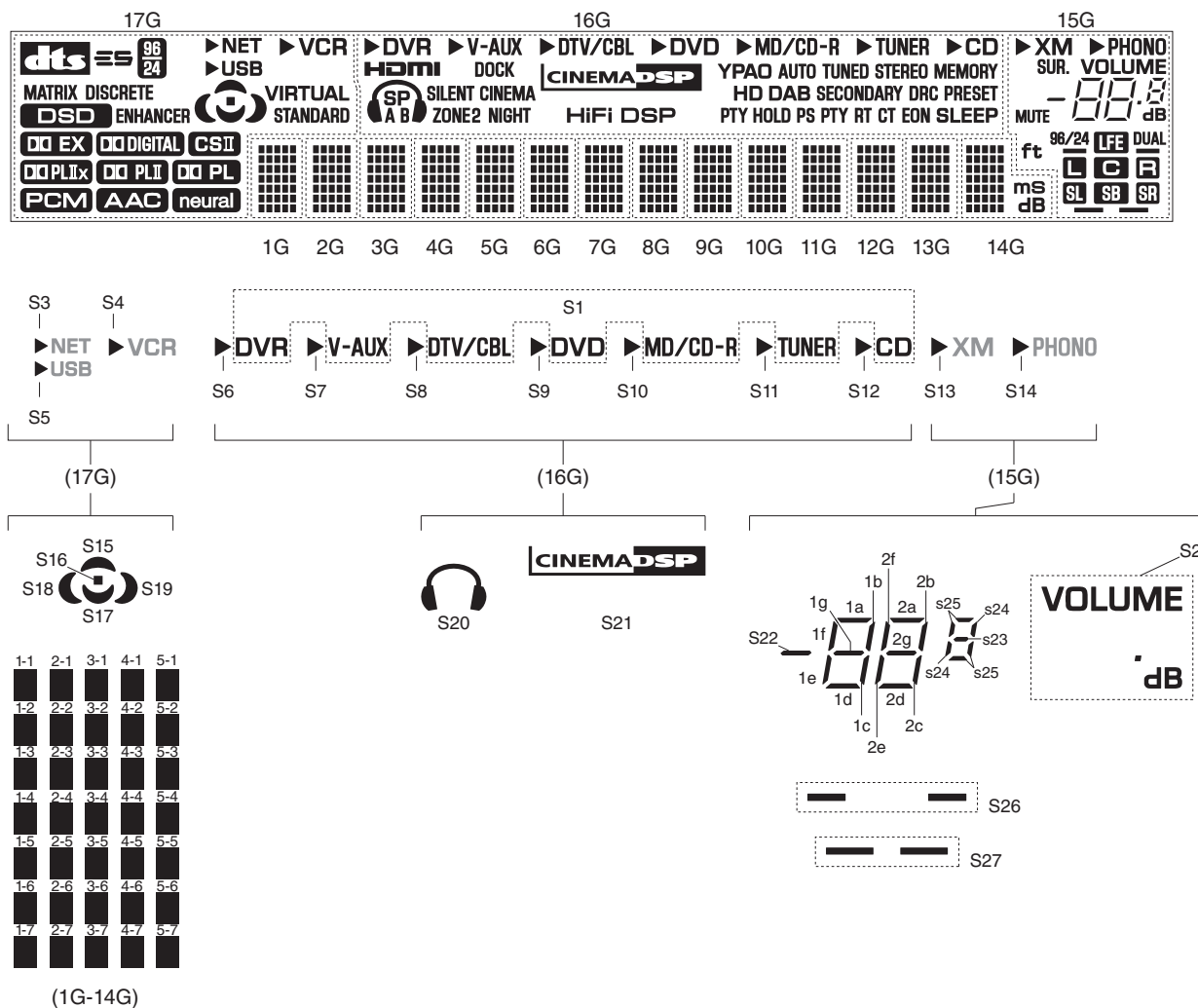
● PIN CONNECTION

Pin No.	69	68	67	66	65	64	63	62	61	60	59	58	57	56	55	54	53	52	51	50	49	48	47	46	45	44	43	42	41	40	39	38	37	36	35
Connection	F2	NX	NP	NP	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31

Pin No.	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	P32	P33	P34	P35	P36	P37	NX	NX	NX	NX	NX	NX	NX	17G	16G	15G	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G	NP	NP	NX	F1

Note : 1) F1, F2 Filament pin 2) NP No pin 3) NX No extend pin 4) 1G-17G Grid pin

● GRID ASSIGNMENT

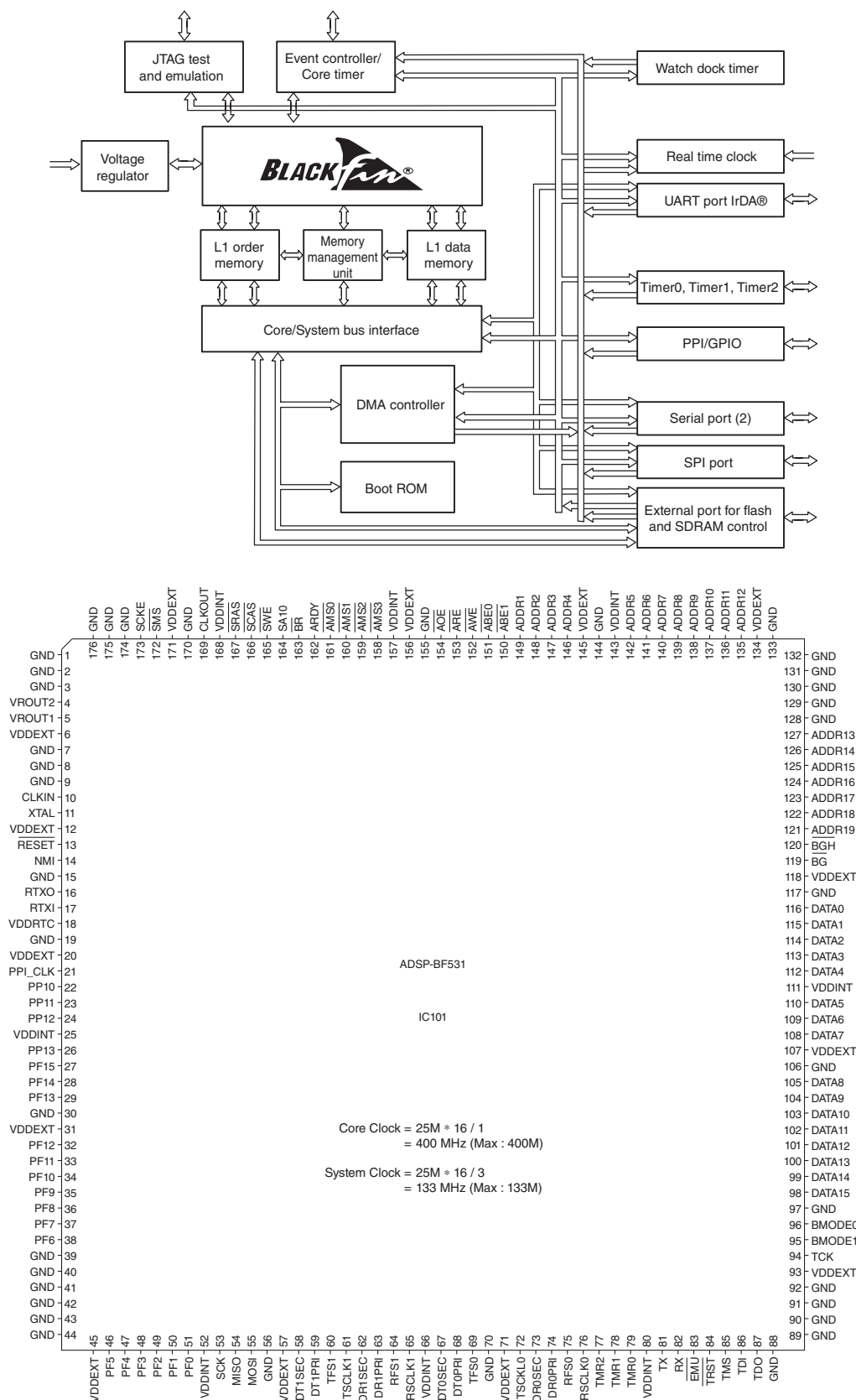


● ANODE CONNECTION

	17G	16G	15G	14G	13G-1G
1P		S1	S2	1-1	1-1
2P		S6	S26	2-1	2-1
3P	MATRIX	S7	S27	3-1	3-1
4P	DISCRETE	S8	S22	4-1	4-1
5P		S9	1a	5-1	5-1
6P		S10	1b	1-2	1-2
7P	ENHANCER	S11	1c	2-2	2-2
8P		S12	1d	3-2	3-2
9P		HDMI	1e	4-2	4-2
10P		S20	1f	5-2	5-2
11P		SP	1g	1-3	1-3
12P		A	2a	2-3	2-3
13P		B	2b	3-3	3-3
14P		SILENT CINEMA	2c	4-3	4-3
15P		ZONE2	2d	5-3	5-3
16P		NIGHT	2e	1-4	1-4
17P	NET	DOCK	2f	2-4	2-4
18P	USB	S21	2g	3-4	3-4
19P	VCR	HiFi DSP	S23	4-4	4-4
20P	S3	YPAO	S24	5-4	5-4
21P	S5	AUTO	S25	1-5	1-5
22P	S4	TUNED	XM	2-5	2-5
23P	S15	STEREO	PHONO	3-5	3-5
24P	S16	MEMORY	S13	4-5	4-5
25P	S17	HD	S14	5-5	5-5
26P	S18	DAB	SUR.	1-6	1-6
27P	S19	SECONDARY	MUTE	2-6	2-6
28P	VIRTUAL	DRC	DUAL	3-6	3-6
29P	STANDARD	PRESET	96/24	4-6	4-6
30P	—	PTY (HOLD)	ft	5-6	5-6
31P	—	HOLD		1-7	1-7
32P	—	PS		2-7	2-7
33P	—	PTY		3-7	3-7
34P	—	RT		4-7	4-7
35P	—	CT		5-7	5-7
36P	—	EON		ms	—
37P	—	SLEEP		dB	—

IC DATA

IC101: ADSP-BF531 CPU (DSP P.C.B.)
Microprocessor and DSP



Pin No.	Port Name	Function Name	I/O	Detail of Function
1	DGND	GND	–	Ground of external
2	DGND	GND	–	Ground of external
3	DGND	GND	–	Ground of external
4	/VINTSW	VROUT2	O	Voltage regulator drive for Q101
5	/VINTSW	VROUT1	O	Voltage regulator drive for Q101
6	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
7	DGND	GND	–	Ground of external
8	DGND	GND	–	Ground of external
9	DGND	GND	–	Ground of external
10	CLKIN	CLKIN	I	Clock/oscillation input
11	XTAL	XTAL	O	Oscillation output
12	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
13	/DRESET	/RESET	I	Delayed reset
14	NMI/DGND	NMI	I	(Pull-down)
15	DGND	GND	–	Ground of external
16	–	RTXO	O	
17	RTXI/DGND	RTXI	I	(Pull-down)
18	–	VDDRTC	–	
19	DGND	GND	–	Ground of external
20	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
21	–	PPI_CLK	I	
22	–	PP10	I/O	
23	–	PP11	I/O	
24	–	PP12	I/O	
25	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
26	–	PP13	I/O	
27	VIB	PF15	O	Video select B
28	VIA	PF14	O	Video select A
29	–	PF13	I	
30	DGND	GND	–	Ground of external
31	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
32	/ICXM	PF12	O	
33	/XMPWR	PF11	O	
34	INTAK	PF10	I	CODEC IC (IC301) interrupt
35	FSYNC/TFS0	PF9	I	Frame sync detect
36	R2A_DATA	PF8	O	DATA for R2A volume/select IC (IC162)
37	R2A_CLK	PF7	O	CLK for R2A volume/select IC (IC161)
38	VRB	PF6	I	Volume rotary B
39	DGND	GND	–	Ground of external
40	DGND	GND	–	Ground of external
41	DGND	GND	–	Ground of external
42	DGND	GND	–	Ground of external
43	DGND	GND	–	Ground of external
44	DGND	GND	–	Ground of external
45	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
46	VRA	PF5	I	Volume rotary A
47	REM	PF4	I	IR remote control pulse input
48	PSW	PF3	I	Power switch (STANDBY/ON)
49	/SPISEL2	PF2	O	CS for EEPROM (IC102)
50	/SPISEL1	PF1	O	CS for 4ch ADC (IC401)
51	/EXPE	PF0	O	Extended port enable
52	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
53	SPISCK	SCK	I/O	SPI clock
54	SPIMI	MISO	I/O	Master input/slave output
55	SPIMO	MOSI	I/O	Master output/slave input
56	DGND	GND	–	Ground of external
57	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
58	DT1SEC	DT1SEC	O	Serial port 1, secondary transmission data
59	DT1PRI	DT1PRI	O	Serial port 1, primary transmission data
60	TFS1	TFS1	I/O	Serial port 1, frame asynchronous transmission

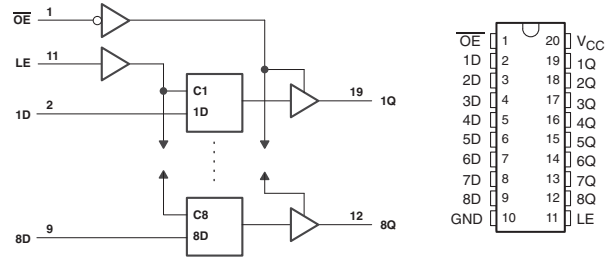
Pin No.	Port Name	Function Name	I/O	Detail of Function
61	TSCLK1	TSCLK1	I/O	Serial port 1, serial transmission clock
62	DR1SEC	DR1SEC	I	Serial port 1, secondary reception data
63	DR1PRI	DR1PRI	I	Serial port 1, primary reception data
64	RFS1	RFS1	I/O	Serial port 1, frame synchronization reception
65	RSCLK1	RSCLK1	I/O	Serial port 1, serial reception clock
66	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
67	DT0SEC	DT0SEC	O	Serial port 0, secondary transmission data
68	DT0PRI	DT0PRI	O	Serial port 0, primary transmission data
69	TFS0	TFS0	I/O	Serial port 0, frame asynchronous transmission
70	DGND	GND	–	Ground of external
71	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
72	TSCLK0	TSCLK0	I/O	Serial port 0, serial transmission clock
73	DR0SEC	DR0SEC	I	Serial port 0, secondary reception data
74	DR0PRI	DR0PRI	I	Serial port 0, primary reception data
75	RFS0	RFS0	I/O	Serial port 0, frame synchronization reception
76	RSCLK0	RSCLK0	I/O	Serial port 0, serial reception clock
77	–	TMR2	I/O	
78	–	TMR1	I/O	
79	LIMITER	TMR0	O	Limiter control output
80	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
81	DTXM	TX	O	
82	DRXM	RX	I	
83	–	/EMU	O	
84	–	/TRST	I	
85	–	TMS	I	
86	–	TDI	I	
87	–	TDO	O	
88	DGND	GND	–	Ground of external
89	DGND	GND	–	Ground of external
90	DGND	GND	–	Ground of external
91	DGND	GND	–	Ground of external
92	DGND	GND	–	Ground of external
93	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
94	–	TCK	I	
95	BMODE1	BMODE1	I	(Pull-down)
96	BMODE0	BMODE0	I	(Pull-up)
97	DGND	GND	–	Ground of external
98	D16	DATA15	I/O	SDRAM data bus 16
99	D15	DATA14	I/O	SDRAM data bus 15
100	D14	DATA13	I/O	SDRAM data bus 14
101	D13	DATA12	I/O	SDRAM data bus 13
102	D12	DATA11	I/O	SDRAM data bus 12
103	D11	DATA10	I/O	SDRAM data bus 11
104	D09	DATA9	I/O	SDRAM data bus 09
105	D08	DATA8	I/O	SDRAM data bus 08
106	DGND	GND	–	Ground of external
107	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
108	D07	DATA7	I/O	SDRAM data bus 07
109	D06	DATA6	I/O	SDRAM data bus 06
110	D05	DATA5	I/O	SDRAM data bus 05
111	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
112	D04	DATA4	I/O	SDRAM data bus 04
113	D03	DATA3	I/O	SDRAM data bus 03
114	D02	DATA2	I/O	SDRAM data bus 02
115	D01	DATA1	I/O	SDRAM data bus 01
116	D00	DATA0	I/O	SDRAM data bus 00
117	DGND	GND	–	Ground of external
118	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
119	–	/BG	O	
120	–	/BGH	O	

Pin No.	Port Name	Function Name	I/O	Detail of Function
121	A19	ADDR19	O	SDRAM address bus 19
122	A18	ADDR18	O	SDRAM address bus 18
123	A17	ADDR17	O	SDRAM address bus 17
124	A16	ADDR16	O	SDRAM address bus 16
125	A15	ADDR15	O	SDRAM address bus 15
126	A14	ADDR14	O	SDRAM address bus 14
127	A13	ADDR13	O	SDRAM address bus 13
128	DGND	GND	–	Ground of external
129	DGND	GND	–	Ground of external
130	DGND	GND	–	Ground of external
131	DGND	GND	–	Ground of external
132	DGND	GND	–	Ground of external
133	DGND	GND	–	Ground of external
134	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
135	A12	ADDR12	O	SDRAM address bus 12
136	A11	ADDR11	O	SDRAM address bus 11
137	A10	ADDR10	O	SDRAM address bus 10
138	A09	ADDR9	O	SDRAM address bus 09
139	A08	ADDR8	O	SDRAM address bus 08
140	A07	ADDR7	O	SDRAM address bus 07
141	A06	ADDR6	O	SDRAM address bus 06
142	A05	ADDR5	O	SDRAM address bus 05
143	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
144	DGND	GND	–	Ground of external
145	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
146	A04	ADDR4	O	SDRAM address bus 04
147	A03	ADDR3	O	SDRAM address bus 03
148	A02	ADDR2	O	SDRAM address bus 02
149	A01	ADDR1	O	SDRAM address bus 01
150	SDQM1	/ABE1	O	SDRAM byte enable/data mask 1
151	SDQM0	/ABE0	O	SDRAM byte enable/data mask 0
152	/AWE	/AWE	O	Write enable (Asynchronous)
153	/ARE	/ARE	O	Read enable
154	/AOE	/AOE	O	Output enable
155	DGND	GND	–	Ground of external
156	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
157	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
158	/AMS3	/AMS3	O	Bank select 3
159	/AMS2	/AMS2	O	Bank select 2
160	/AMS1	/AMS1	O	Bank select 1
161	/AMS0	/AMS0	O	Bank select 0
162	ARDY	ARDY	I	Hardware ready control
163	/BR	/BR	I	(Pull-up)
164	SA10	SA10	O	A10 pin
165	/SWE	/SWE	O	Write enable (Synchronization)
166	/SCAS	/SCAS	O	Sequence address strobe
167	/SRAS	/SRAS	O	Line address strobe
168	VDDINT	VDDINT	–	Power supply of microprocessor (BF1.2)
169	CLKOUT	CLKOUT	O	Clock output
170	DGND	GND	–	Ground of external
171	VDDEXT	VDDEXT	–	I/O power supply (EX3.3)
172	/SMS	/SMS	O	Bank select
173	SCKE	SCKE	O	Clock enable
174	DGND	GND	–	Ground of external
175	DGND	GND	–	Ground of external
176	DGND	GND	–	Ground of external

- Microprocessor extended port

IC204-IC206: SN74LV573APWR (DSP P.C.B.)

Octal 3-state D-latches with 3-state outputs



IC204

Pin No.	Port Name	Function Name	Detail of Function
1	/OE	/EXPE	Extended port enable
2	1D	D00	Data bus 00
3	2D	D01	Data bus 01
4	3D	D02	Data bus 02
5	4D	D03	Data bus 03
6	5D	D04	Data bus 04
7	6D	D05	Data bus 05
8	7D	D06	Data bus 06
9	8D	D07	Data bus 07
10	GND	DGND	Ground of external
11	LE	LEEX1	Bank select 1
12	8Q	/SPISEL3	CS for CODEC IC (IC301, DSP P.C.B.)
13	7Q	ADSEL2	4ch ADC input select 2
14	6Q	ADSEL1	4ch ADC input select 1
15	5Q	ADSEL0	4ch ADC input select 0
16	4Q	/CCBE	SPI bus switch
17	3Q	/CMT	Center mute
18	2Q	/SMT	Surround mute
19	1Q	/FMT	Front mute
20	VCC	EX3.3	Power supply

IC205

Pin No.	Port Name	Function Name	Detail of Function
1	/OE	/EXPE	Extended port enable
2	1D	D08	Data bus 08
3	2D	D09	Data bus 09
4	3D	D10	Data bus 10
5	4D	D11	Data bus 11
6	5D	D12	Data bus 12
7	6D	D13	Data bus 13
8	7D	D14	Data bus 14
9	8D	D15	Data bus 15
10	GND	DGND	Ground of external
11	LE	LEEX1	Bank select 1 (B, G, E, F models)
12	8Q	CLKSEL/RDS_RST	Reset for RDS (B, G, E, F models)
13	7Q	SSEL3	SCENE select LED switch 3
14	6Q	SSEL2	SCENE select LED switch 2
15	5Q	SSEL1	SCENE select LED switch 1
16	4Q	/IC_AK	IC for CODEC IC (IC301, DSP P.C.B.) and VFD (IC201, OPERATION P.C.B.)
17	3Q	/SPISEL4	CS for VFD (IC201, OPERATION P.C.B.)
18	2Q	/3.3SW	+3.3S switch
19	1Q	PRY	Power relay
20	VCC	EX3.3	Power supply

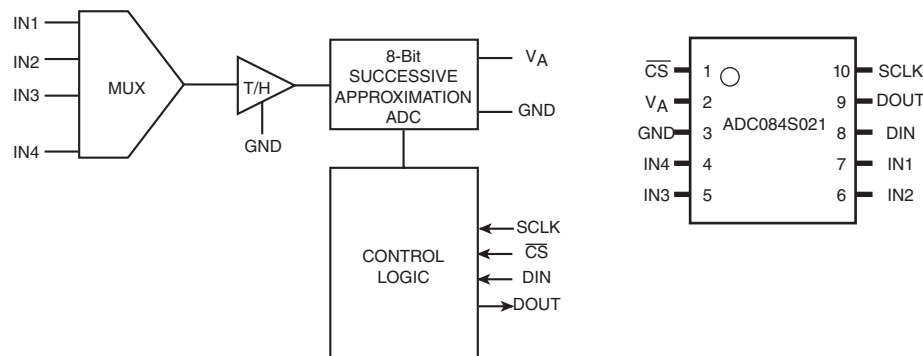
IC206

Pin No.	Port Name	Function Name	Detail of Function
1	/OE	/EXPE	Extended port enable
2	1D	D00	Data bus 00
3	2D	D01	Data bus 01
4	3D	D02	Data bus 02
5	4D	D03	Data bus 03
6	5D	D04	Data bus 04
7	6D	D05	Data bus 05
8	7D	D06	Data bus 06
9	8D	D07	Data bus 07
10	GND	DGND	Ground of external
11	LE	LEEX2	Bank select 2
12	8Q	/VR1	Video select R
13	7Q	SPISEL5	CE for tuner
14	6Q	/8ohmSW	AC H/L relay (RY106, MAIN P.C.B.)
15	5Q	HPRY	Headphone relay (RY102, MAIN P.C.B.)
16	4Q	MRYA	Main speakers A relay (RY101, MAIN P.C.B.)
17	3Q	MRYB	Main speakers B relay (RY102, MAIN P.C.B.)
18	2Q	CSRY	Center/surround speakers relay (RY103/Ry105, MAIN P.C.B.)
19	1Q	/SWMT	Subwoofer mute
20	VCC	EX3.3	Power supply

• **Microprocessor ADC select port**

IC401: ADC084S021CIMM (DSP P.C.B.)

4-channel, 200 kSPS, 8-bit A/D converter



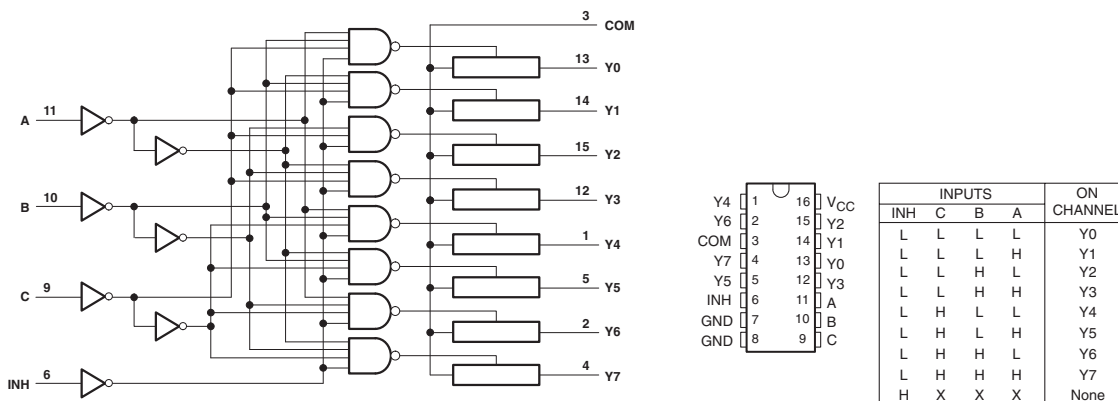
Pin No.	Port Name	Function Name	Detail of Function
1	/CS	/SPISEL 1	CS for microprocessor
2	VA	VA	+3.3S
3	GND	DGND	Ground of external
4	IN4	IN4	SPI bus COM (IC402)
5	IN3	IN3	SPI bus COM (IC403)
6	IN2	KEY1	Key input 1
7	IN1	KEY0	Key input 0
8	DIN	SPIMO	Master output/slave input
9	DOUT	SPIMI	Master input/slave output
10	SCLK	SPISCK	SPI clock

Key input (A/D), pull-up resistance 10 k-ohms

Ohm [ohm]	+1.0 k	+1.0 k	+1.5 k	+2.2 k	+3.3 k	+4.7 k	+4.7 k	+6.8 k	+10.0 k	+22.0 k
V [V]	0.3	0.55	0.86	1.2	1.56	1.91	2.14	2.36	2.57	2.81
KEY0 (7 pin)	SCENE 1	SCENE 2	PROGRAM <	PROGRAM >	STRAIGHT	TONE CONTROL	PRESET/ TUNING	BAND	A/B/C/D/E	SPEAKERS
KEY1 (6 pin)	SCENE 3	SCENE 4	NIGHT	–	INPUT <	INPUT >	PRESET/ TUNING <	PRESET/ TUNING >	MEMORY	TUNING

IC402, IC403: SN74LV4051APWR (DSP P.C.B.)

8-channel analog multiplexers/demultiplexers



IC402

Pin No.	Port Name	Function Name	Detail of Function
1	Y4	–	
2	Y6	–	
3	COM	COM	SPI bus IN4 (IC401)
4	Y7	LINKACTIVE	Link detect (U, C models)
5	Y5	XM_MUTE	
6	INH	DGND	(Pull-down)
7	GND	DGND	Ground of external
8	GND	DGND	Ground of external
9	COM	ADSEL2	Input select 2
10	B	ADSEL1	Input select 1
11	A	ADSEL0	Input select 0
12	Y3	–	
13	Y0	–	
14	Y1	/ST	Stereo for tuner
15	Y2	/TUNED	Tuned for tuner
16	Vcc	+3.3S	Power supply

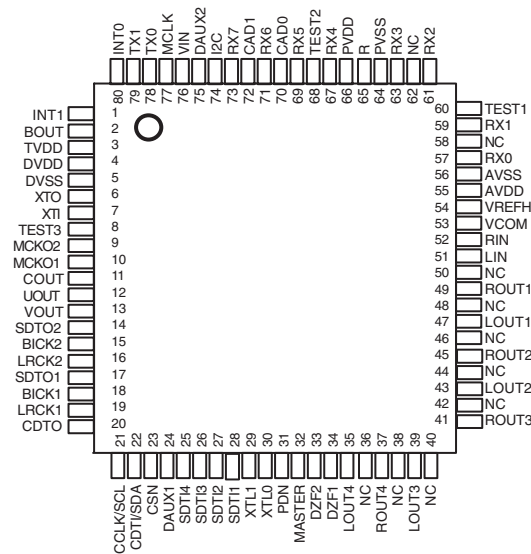
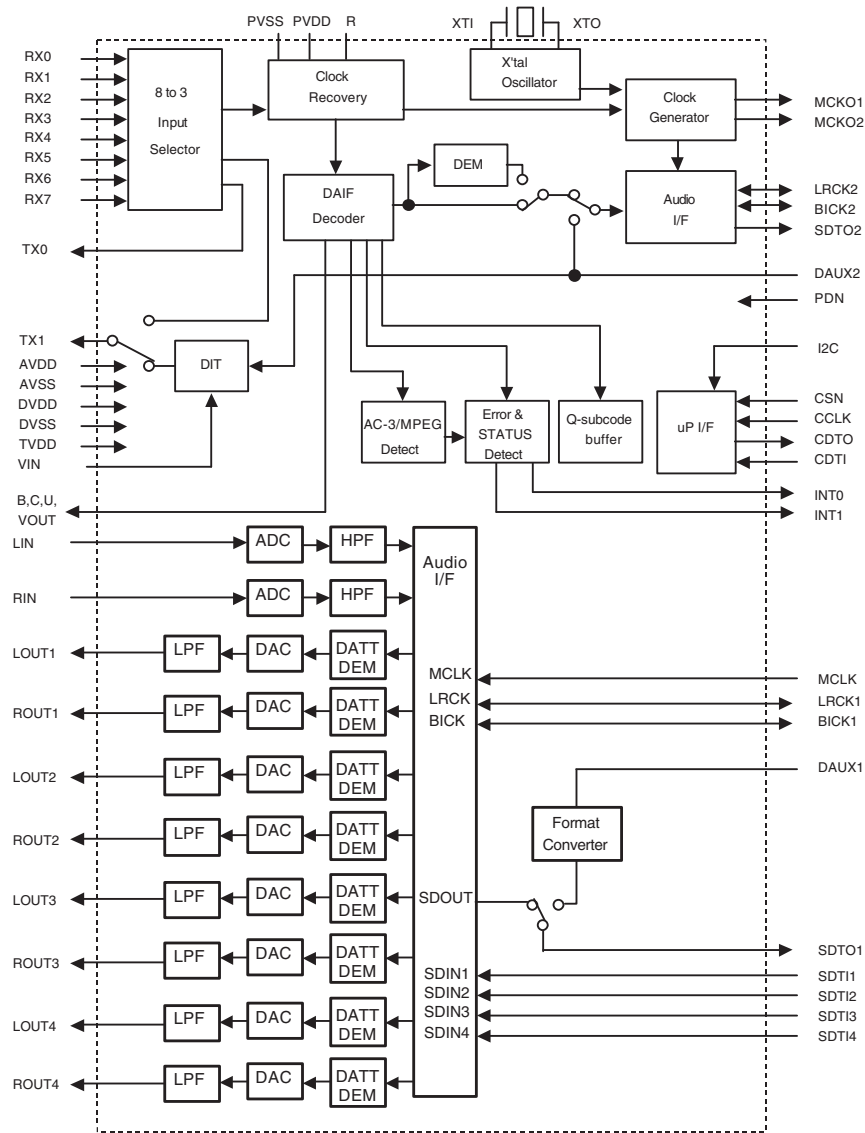
IC403

Pin No.	Port Name	Function Name	Detail of Function
1	Y4	DEST	Destination 1 *
2	Y6	/PDET	Sub-trans detect
3	COM	COM	SPI bus IN3 (IC401)
4	Y7	/HP	Headphone detect
5	Y5	PRIIN	Current protection
6	INH	DGND	(Pull-down)
7	GND	DGND	Ground of external
8	GND	DGND	Ground of external
9	COM	ADSEL2	Input select 2
10	B	ADSEL1	Input select 1
11	A	ADSEL0	Input select 0
12	Y3	PLDET	Limiter detect
13	Y0	PRDIN	Amplifier DC detect
14	Y1	PRVIN	Voltage protection
15	Y2	THMIN	Thermo protection
16	Vcc	+3.3S	Power supply

*** Destination for A/D port**

R406 [ohm]	1.5 k	3.3 k	4.7 k	6.8 k	8.2 k
R407 [ohm]	8.2 k	6.8 k	5.6 k	3.9 k	2.2 k
DEST (1 pin) [V]	2.6-3.0	2.0-2.4	1.6-2.0	1.0-1.4	0.5-0.9
A/D value (3.3 V=255)	206-226	162-182	129-149	83-103	44-64
Destination	U, C	R, L	T	K, A	B, G, E, F

IC301: AK4588VQ (DSP P.C.B.)
2/8-channel audio CODEC with DIR

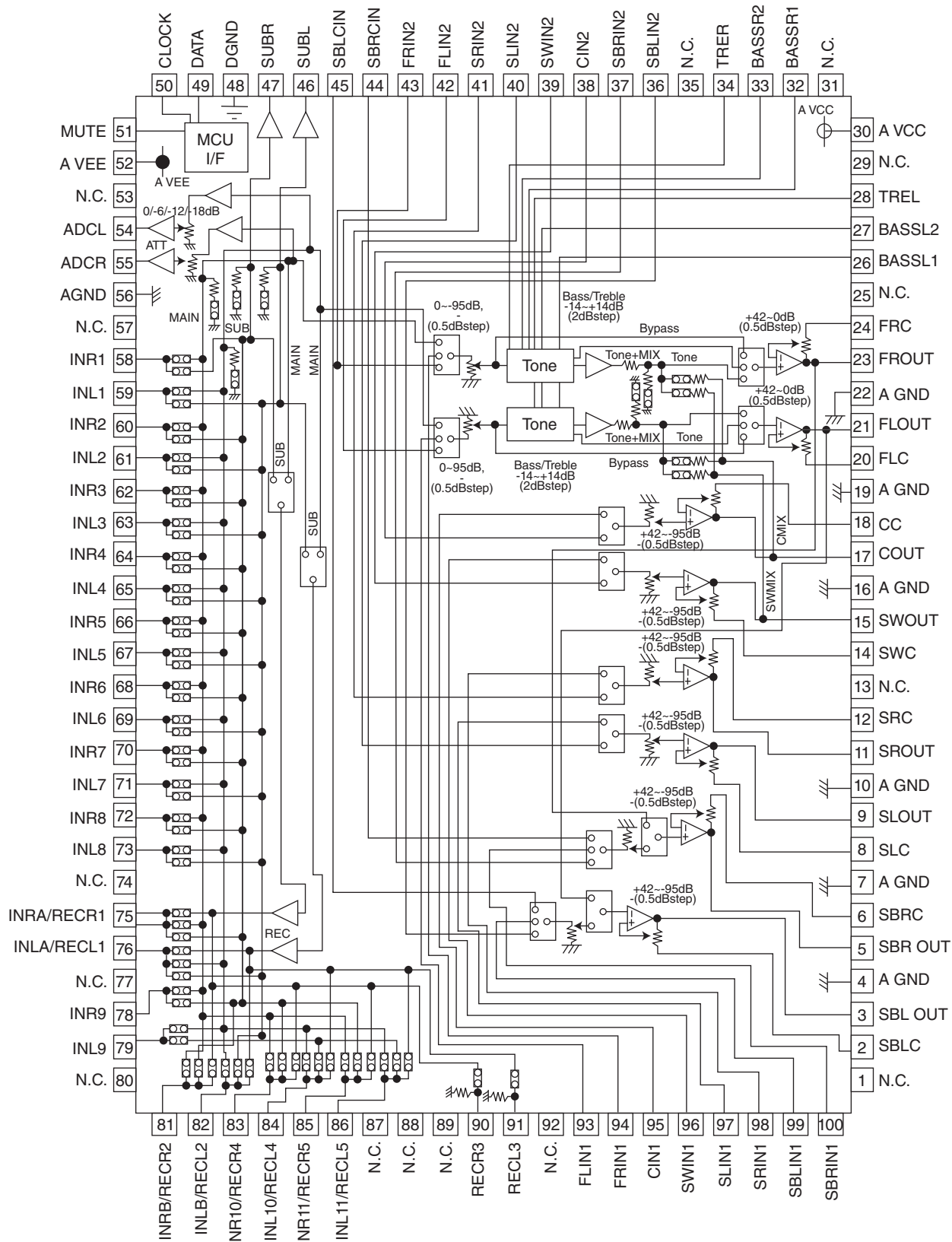


Pin No.	Function Name	I/O	Detail of Function
1	INT1	O	Interrupt 1 pin
2	BOUT	O	Block-start output pin for receiver input "H" during first 40 flames
3	TVDD	–	Output buffer power supply pin, 2.7 V to 5.5 V
4	DVDD	–	Digital power supply pin, 4.5 V to 5.5 V
5	DVSS	–	Digital ground pin
6	XTO	O	X'tal clock output pin
7	XTI	I	X'tal / External clock input pin
8	TEST3	I	Test 3 pin This pin should be connected to DVSS
9	MCKO2	O	Master clock output 2 pin
10	MCKO1	O	Master clock output 1 pin
11	COUT	O	C-bit output pin for receiver input
12	UOUT	O	U-bit output pin for receiver input
13	VOUT	O	V-bit output pin for receiver input
14	SDTO2	O	Audio serial data output pin (DIR/DIT part)
15	BICK2	I/O	Audio serial data clock pin (DIR/DIT part)
16	LRCK2	I/O	Channel clock pin (DIR/DIT part)
17	SDTO1	O	Audio serial data output pin (ADC/DAC part)
18	BICK1	I/O	Audio serial data clock pin (ADC/DAC part)
19	LRCK1	I/O	Input channel clock pin
20	CDTO	O	Control data output pin in serial mode, I2C pin= "L"
21	CCLK	I	Control data clock pin in serial mode, I2C pin= "L"
	SCL	I	Control data clock pin in serial mode, I2C pin= "H"
22	CDTI	I	Control data input pin in serial mode, I2C pin= "L"
	SDA	I/O	Control data pin in serial mode, I2C pin= "H"
23	CSN	I	Chip select pin in serial mode, I2C pin= "L"
		I	This pin should be connected to DVSS, I2C pin= "H"
24	DAUX1	I	AUX audio serial data input pin (ADC/DAC part)
25	SDTI4	I	DAC4 audio serial data input pin
26	SDTI3	I	DAC3 audio serial data input pin
27	SDTI2	I	DAC2 audio serial data input pin
28	SDTI1	I	DAC1 audio serial data input pin
29	XTL1	I	X'tal frequency select 0 pin
30	XTL0	I	X'tal frequency select 1 pin
31	PDN	I	Power-down mode pin When "L", the AK4588 is powered-down, all output pin goes "L", all registers are reset When CAD1-0 pins are changed, the AK4588 should be reset by PDN pin
32	MASTER	I	Master mode select pin "H": Master mode, "L": Slave mode
33	DZF2	O	Zero input detect 2 pin (table 13) When the input data of the group 1 follow total 8192 LRCK cycles with "0" input data, this pin goes to "H" / When RSTN1 bit is "0" or PWDAN bit is "0", this pin goes to "H"
	OVF	O	Analog input overflow detect pin This pin goes to "H" if the analog input of L ch or R ch overflows This pin becomes OVF pin if OVFE bit is set to 1
34	DZF1	O	Zero input detect 1 pin (table 13) When the input data of the group 1 follow total 8192 LRCK cycles with "0" input data, this pin goes to "H" / When RSTN1 bit is "0" or PWDAN bit is "0", this pin goes to "H"
35	LOUT4	O	DAC4 L ch analog output pin
36	NC	–	No connect pin No internal bonding / This pin should be opened
37	ROUT4	O	DAC4 R ch analog output pin
38	NC	–	No connect pin No internal bonding / This pin should be opened
39	LOUT3	O	DAC3 L ch analog output pin
40	NC	–	No connect pin No internal bonding / This pin should be opened

Pin No.	Function Name	I/O	Detail of Function
41	ROUT3	O	DAC3 R ch analog output pin
42	NC	–	No connect pin No internal bonding / This pin should be opened
43	LOUT2	O	DAC2 L ch analog output pin
44	NC	–	No connect pin No internal bonding / This pin should be opened
45	ROUT2	O	DAC2 R ch analog output pin
46	NC	–	No connect pin No internal bonding / This pin should be opened
47	LOUT1	O	DAC1 L ch analog output pin
48	NC	–	No connect pin No internal bonding / This pin should be opened
49	ROUT1	O	DAC1 R ch analog output pin
50	NC	–	No connect pin No internal bonding / This pin should be opened
51	LIN	I	L ch analog input pin
52	RIN	I	R ch analog input pin
53	VCOM	–	Common voltage output pin 2.2 F capacitor should be connected to AVSS externally
54	VREFH	–	Positive voltage reference input pin, AVDD
55	AVDD	–	Analog power supply pin, 4.5 V to 4.5 V
56	AVSS	–	Analog ground pin, 0 V
57	RX0	I	Receiver channel 0 pin (Internal biased pin / Internally biased at PVDD/2)
58	NC	–	No connect pin No internal bonding / This pin should be connected to PVSS
59	RX1	I	Receiver channel 1 pin (Internal biased pin / Internally biased at PVDD/2)
60	TEST1	I	Test 1 pin This pin should be connected to PVSS
61	RX2	I	Receiver channel 2 pin (Internal biased pin / Internally biased at PVDD/2)
62	NC	–	No connect pin No internal bonding / This pin should be connected to PVSS
63	RX3	I	Receiver channel 3 pin (Internal biased pin / Internally biased at PVDD/2)
64	PVSS	–	PLL ground pin
65	R	–	External resistor pin 12 k-ohms +/-1 % resistor should be connected to PVSS externally
66	PVDD	–	PLL power supply pin, 4.5 V to 4.5 V
67	RX4	I	Receiver channel 4 pin (Internal biased pin / Internally biased at PVDD/2)
68	TEST2	I	Test 2 pin This pin should be connected to PVSS
69	RX5	I	Receiver channel 5 pin (Internal biased pin / Internally biased at PVDD/2)
70	CAD0	I	Chip address 0 pin (ADC/DAC part)
71	RX6	I	Receiver channel 6 pin (Internal biased pin / Internally biased at PVDD/2)
72	CAD1	I	Chip address 1 pin (ADC/DAC part)
73	RX7	I	Receiver channel 7 pin (Internal biased pin / Internally biased at PVDD/2)
74	I2C	I	Control mode select pin “L”: 4-wire serial, “H”: I2C bus
75	DAUX2	I	Auxiliary audio data input pin (DIR/DIT part)
76	VIN	I	V-bit input pin for transmitter output
77	MCLK	I	Master clock input pin
78	TX0	O	Transmit channel (through data) output 0 pin
79	TX1	O	Transmit channel output 1 pin When TX bit = “0”, transmit channel (through data) output 1 pin. When TX bit = “1”, transmit channel (DAUX2 data) output pin (default)
80	INT0	O	Interrupt 0 pin

Note: All input pins except internal biased pins and internal pull-down pin should not be left floating.

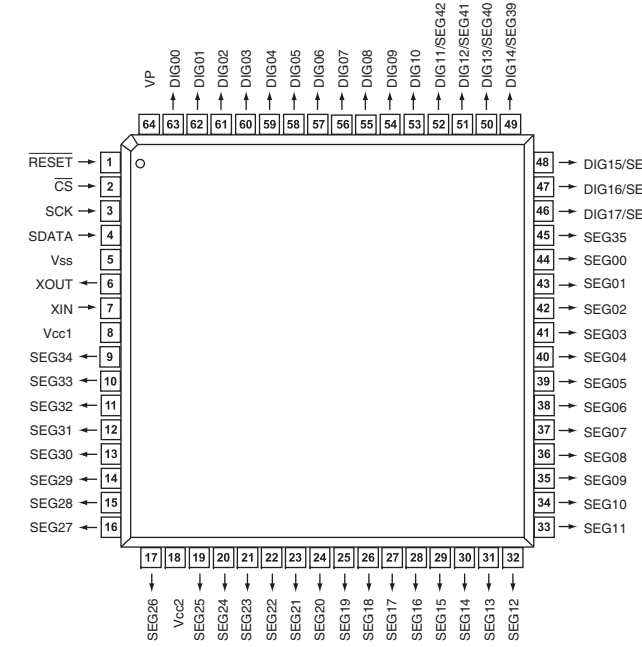
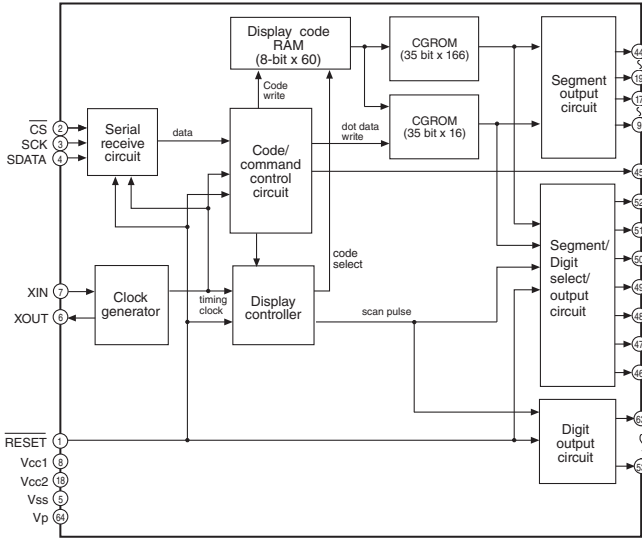
IC161: R2A15218FP (MAIN P.C.B.)
8-channel electronic volume with 11 input selector and tone control



Pin No	Function Name	Detail of Function
1	N.C.	No connected
2	SBLC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
3	SBLOUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
4	AGND	Analog GND terminal
5	SBROUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
6	SBRC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
7	AGND	Analog GND terminal
8	SLC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
9	SLOUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
10	AGND	Analog GND terminal
11	SROUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
12	SRC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
13	N.C.	No connected
14	SWC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
15	SWOUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
16	AGND	Analog GND terminal
17	COUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
18	CC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
19	AGND	Analog GND terminal
20	FLC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
21	FLOUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
22	AGND	Analog GND terminal
23	FROUT	FL/FR/C/SW/SL/SR/SBL/SBR ch output terminal
24	FRC	L/R/C/SW/SL/SR/SBL/SBR ch terminal to connect capacitor to reduce noise from changing the volume
25	N.C.	No connected
26	BASSL1	L/R ch tone control (Bass) terminal for setting frequency characteristics
27	BASSL2	L/R ch tone control (Bass) terminal for setting frequency characteristics
28	TREL	L/R ch tone control (Treble) terminal for setting frequency characteristics
29	N.C.	No connected
30	AVCC	Positive side power terminal
31	N.C.	No connected
32	BASSR1	L/R ch tone control (Bass) terminal for setting frequency characteristics
33	BASSR2	L/R ch tone control (Bass) terminal for setting frequency characteristics
34	TRER	L/R ch tone control (Treble) terminal for setting frequency characteristics
35	N.C.	No connected
36	SBLIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
37	SBRIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
38	CIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
39	SWIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
40	SLIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
41	SRIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
42	FLIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
43	FRIN2	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
44	SBRCIN	SBL/SBR ch volume input terminal
45	SBLCIN	SBL/SBR ch volume input terminal
46	SUBL	L/R ch SUB output terminal
47	SUBR	L/R ch SUB output terminal
48	DGND	Digital GND terminal
49	DATA	Control data input terminal
50	CLOCK	Control data input terminal
51	MUTE	External Mute Control terminal
52	AVEE	Negative side power terminal
53	N.C.	No connected
54	ADCL	L/R ch ADC output terminal
55	ADCR	L/R ch ADC output terminal

Pin No	Function Name	Detail of Function
56	AGND	Analog GND terminal
57	N.C.	No connected
58	INR1	L/R ch input terminal (input selector)
59	INL1	L/R ch input terminal (input selector)
60	INR2	L/R ch input terminal (input selector)
61	INL2	L/R ch input terminal (input selector)
62	INR3	L/R ch input terminal (input selector)
63	INL3	L/R ch input terminal (input selector)
64	INR4	L/R ch input terminal (input selector)
65	INL4	L/R ch input terminal (input selector)
66	INR5	L/R ch input terminal (input selector)
67	INL5	L/R ch input terminal (input selector)
68	INR6	L/R ch input terminal (input selector)
69	INL6	L/R ch input terminal (input selector)
70	INR7	L/R ch input terminal (input selector)
71	INL7	L/R ch input terminal (input selector)
72	INR8	L/R ch input terminal (input selector)
73	INL8	L/R ch input terminal (input selector)
74	N.C.	No connected
75	INRA/RECR1	L/R ch input terminal (input selector) / L/R ch REC output terminal
76	INLA/RECL1	L/R ch input terminal (input selector) / L/R ch REC output terminal
77	N.C.	No connected
78	INR9	L/R ch input terminal (input selector)
79	INL9	L/R ch input terminal (input selector)
80	N.C.	No connected
81	INRB/RECR2	L/R ch input terminal (input selector) / L/R ch REC output terminal
82	INLB/RECL2	L/R ch input terminal (input selector) / L/R ch REC output terminal
83	INR10/RECR4	L/R ch input terminal (input selector) / L/R ch REC output terminal
84	INL10/RECL4	L/R ch input terminal (input selector) / L/R ch REC output terminal
85	INR11/RECR5	L/R ch input terminal (input selector) / L/R ch REC output terminal
86	INL11/RECL5	L/R ch input terminal (input selector) / L/R ch REC output terminal
87	N.C.	No connected
88	N.C.	No connected
89	N.C.	No connected
90	RECR3	L/R ch REC output terminal
91	RECL3	L/R ch REC output terminal
92	N.C.	No connected
93	FLIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
94	FRIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
95	CIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
96	SWIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
97	SLIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
98	SRIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
99	SBLIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)
100	SBRIN1	L/R/C/SW/SL/SR/SBL/SBR ch input terminal (multi input 1/2)

IC201: M66003-0131FP-R (OPERATION P.C.B.)
18 digit 5x7 segment VFD controller/driver



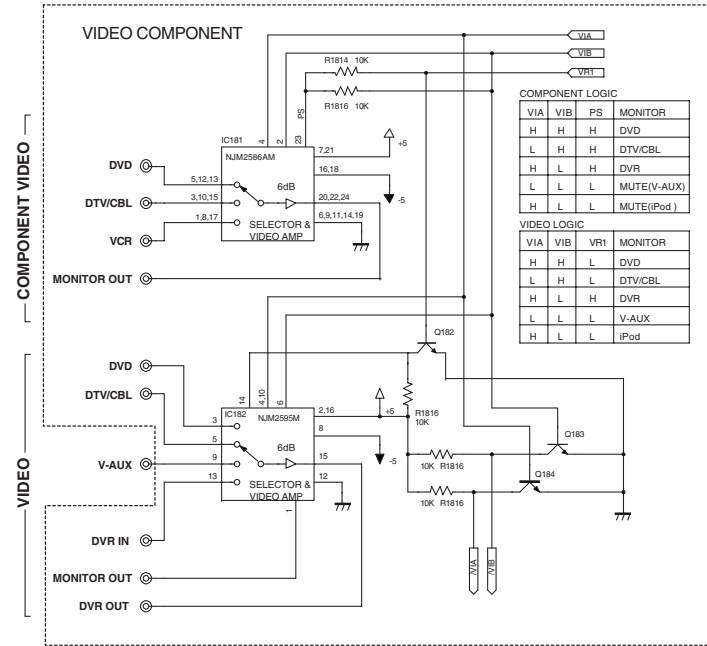
Pin No	Port Name	Function Name	I/O	Detail of Function
1	Reset	/RESET	Reset input	When "L", M66003 is initialized
2	CS	/CEFL	Chip select input	When "L", communication with the MCU is possible When "H", any instruction from the MCU is neglected
3	SCK	CKFL	Shift clock input	Serial input data is taken and shifted by the positive edge of SCK
4	SDATA	DTFL	Serial data input	
5	Vss	VSS		GND (0V)
6	XOUT	XOUT	Clock output	When use as a CR oscillator, connect external resistor and capacitor / When use an external clock, input external clock to XIN, and XOUT must be opened
7	XIN	XIN	Clock input	
8	Vcc1	VDD		Positive power supply for internal logic
9	SEG34	P11	Segment output	
10	SEG33	P2	Segment output	

Pin No	Port Name	Function Name	I/O	Detail of Function
11	SEG32	P3	Segment output	Positive power supply for DIG and SEG outputs
12	SEG31	P4	Segment output	
13	SEG30	P5	Segment output	
14	SEG29	P6	Segment output	
15	SEG28	P7	Segment output	
16	SEG27	P8	Segment output	
17	SEG26	P9	Segment output	
18	Vcc2	VDD		
19	SEG25	P10	Segment output	Connect to segment (anode) pins of VFD
20	SEG24	P11	Segment output	
21	SEG23	P12	Segment output	
22	SEG22	P13	Segment output	
23	SEG21	P14	Segment output	
24	SEG20	P15	Segment output	
25	SEG19	P16	Segment output	
26	SEG18	P17	Segment output	
27	SEG17	P18I	Segment output	
28	SEG16	P19	Segment output	
29	SEG15	P20	Segment output	
30	SEG14	P21	Segment output	
31	SEG13	P22	Segment output	
32	SEG12	P23	Segment output	
33	SEG11	P24	Segment output	
34	SEG10	P25	Segment output	
35	SEG09	P26	Segment output	
36	SEG08	P27	Segment output	
37	SEG07	P28	Segment output	
38	SEG06	P29	Segment output	
39	SEG05	P30	Segment output	Connect to digit (grid) pins of VFD
40	SEG04	P31	Segment output	
41	SEG03	P32	Segment output	
42	SEG02	P33	Segment output	
43	SEG01	P34	Segment output	
44	SEG00	P35	Segment output	
45	SEG35	P36	Segment output	
46	DIG17/SEG36	P37	Segment output	
47	DIG16/SEG37	G17I	Digit output	
48	DIG15/SEG38	G16I	Digit output	
49	DIG14/SEG39	G15I	Digit output	
50	DIG13/SEG40	G14	Digit output	
51	DIG12/SEG41	G13	Digit output	
52	DIG11/SEG42	G12	Digit output	
53	DIG10	G11	Digit output	
54	DIG09	G10	Digit output	
55	DIG08	G9	Digit output	Connect to digit (grid) pins of VFD
56	DIG07	G8	Digit output	
57	DIG06	G7	Digit output	
58	DIG05	G6	Digit output	
59	DIG04	G5	Digit output	
60	DIG03	G4	Digit output	
61	DIG02	G3	Digit output	
62	DIG01	G2	Digit output	
63	DIG00	G1	Digit output	Negative power supply to pull down
64	Vp	VP		

VIDEO, AUDIO and Power Supply Sections BLOCK DIAGRAM

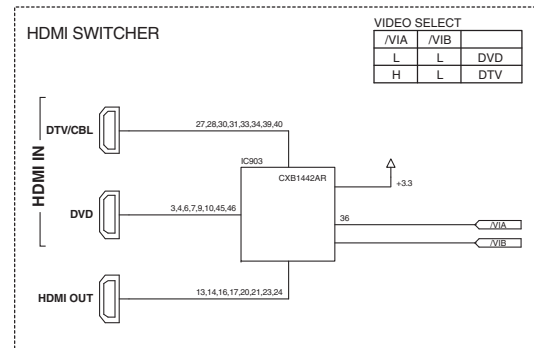
OPERATION

- See page 79, 80 → SCHEMATIC DIAGRAM



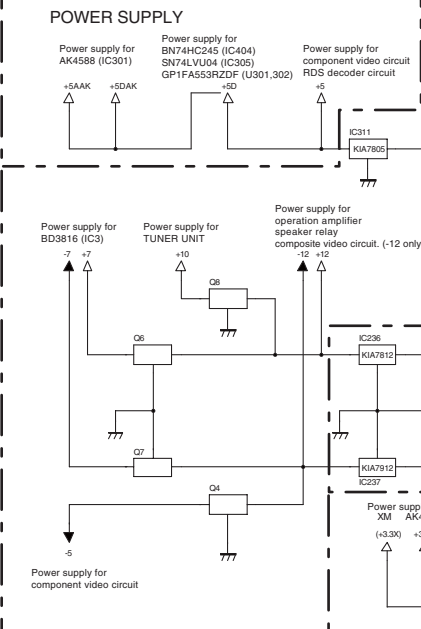
HDMI

- See page 83 →
SCHEMATIC DIAGRAM



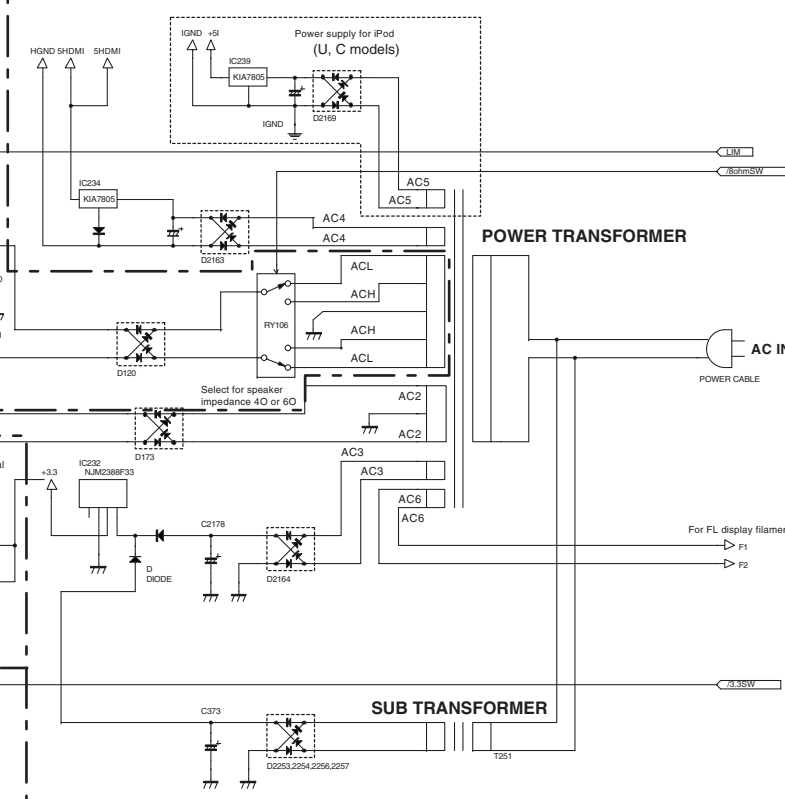
DSP

- See page 73-78 → SCHEMATIC DIAGRAM



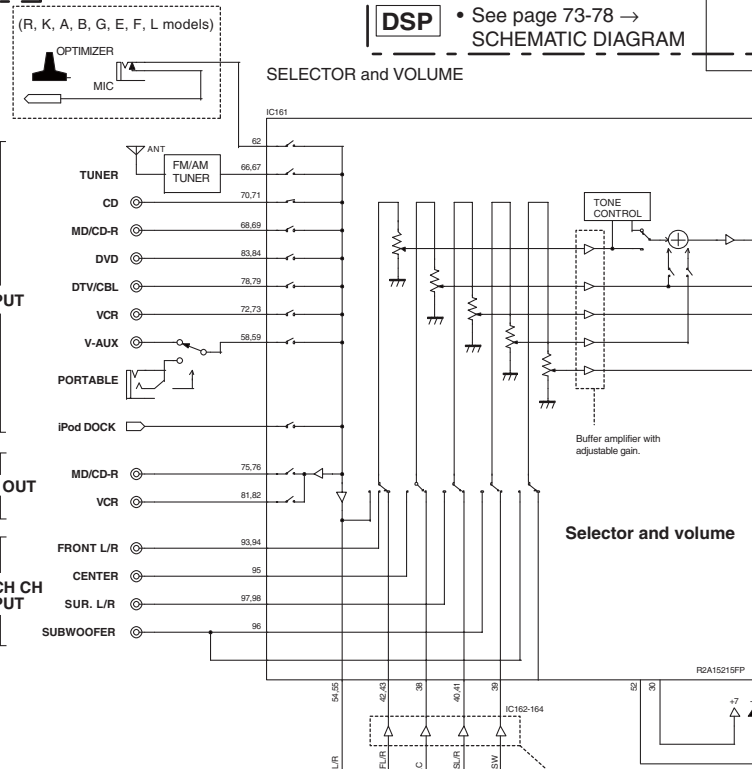
OPERATION

- See page 79, 80 → SCHEMATIC DIAGRAM



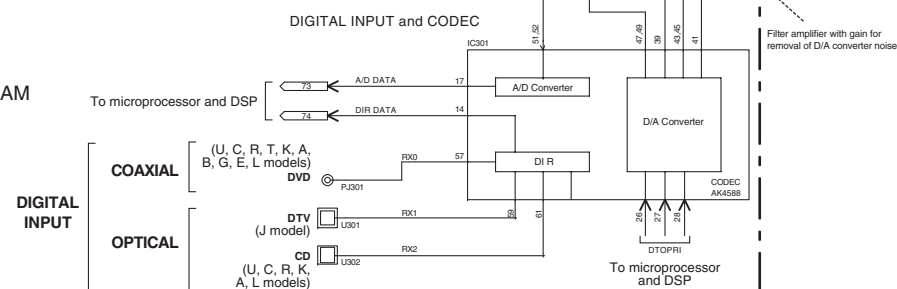
DSP

- See page 73-78 →
SCHEMATIC DIAGRAM

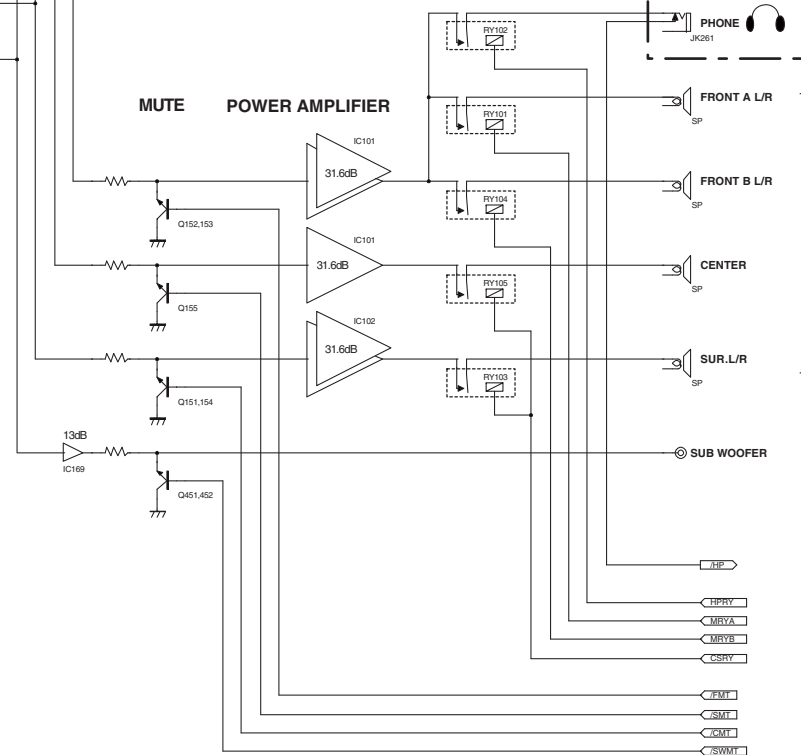


DSP

- See page 73-78 →
SCHEMATIC DIAGRAM



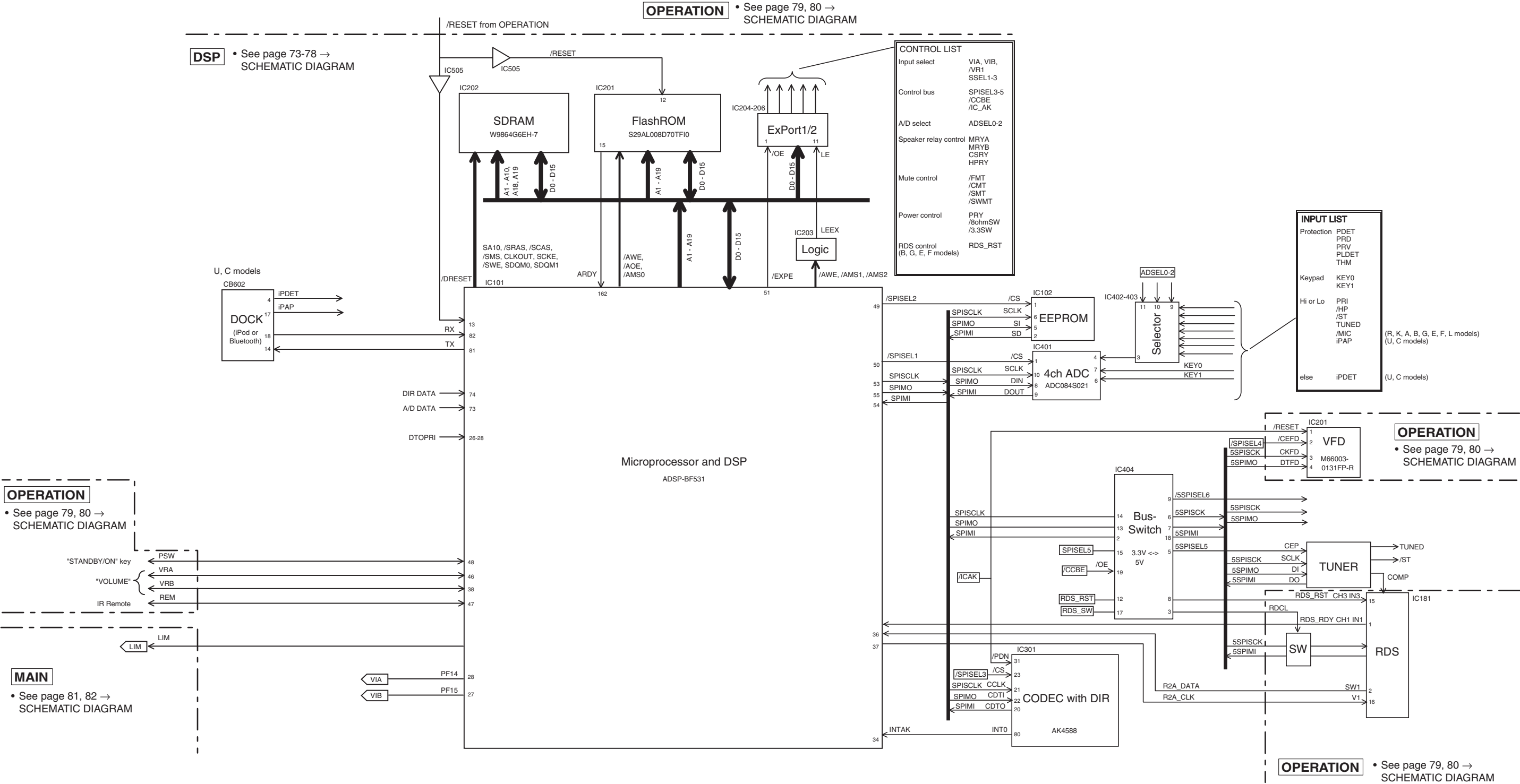
SPEAKER RELAY



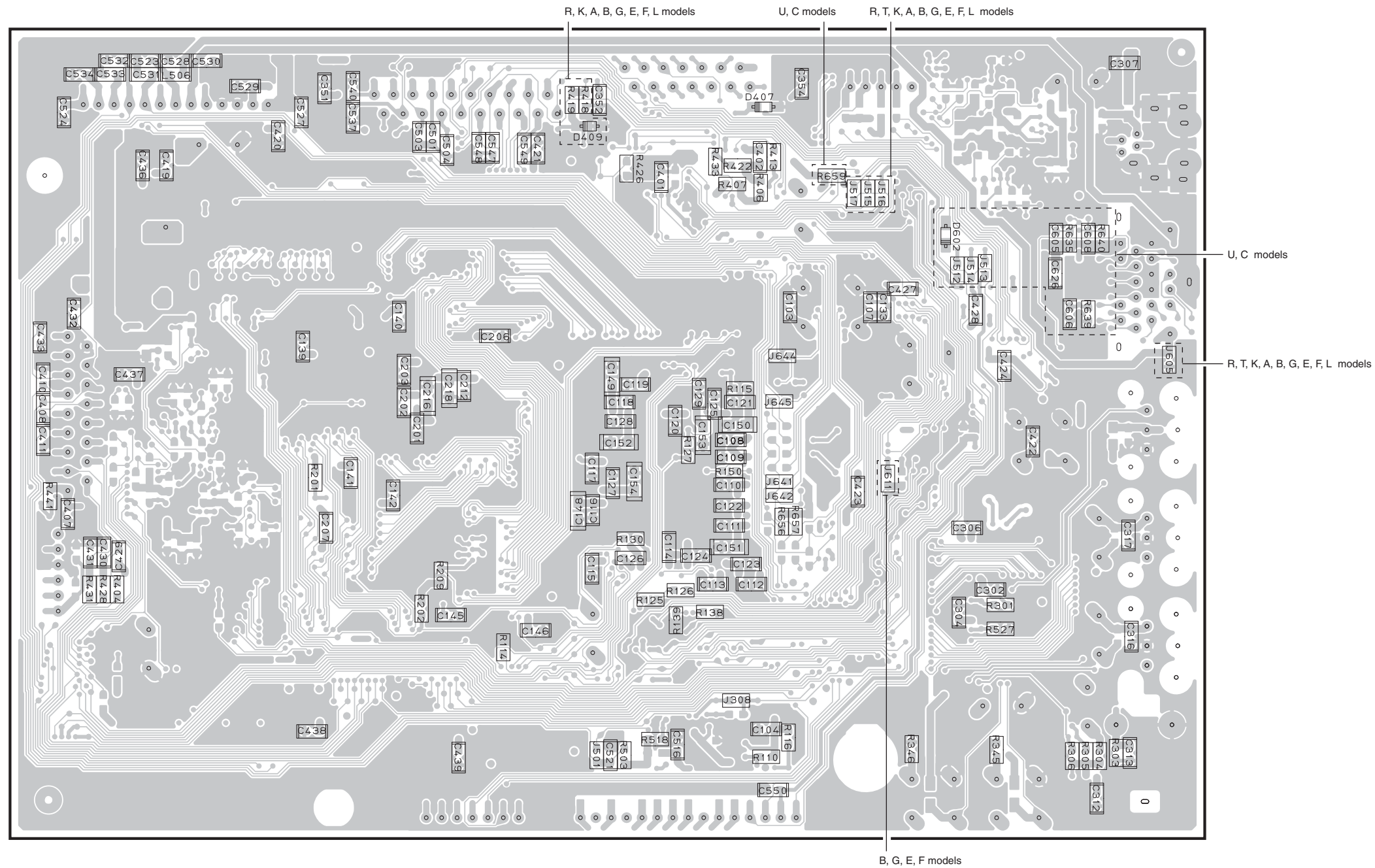
MAIN

- See page 81, 82 → SCHEMATIC DIAGRAM

Control Section BLOCK DIAGRAM



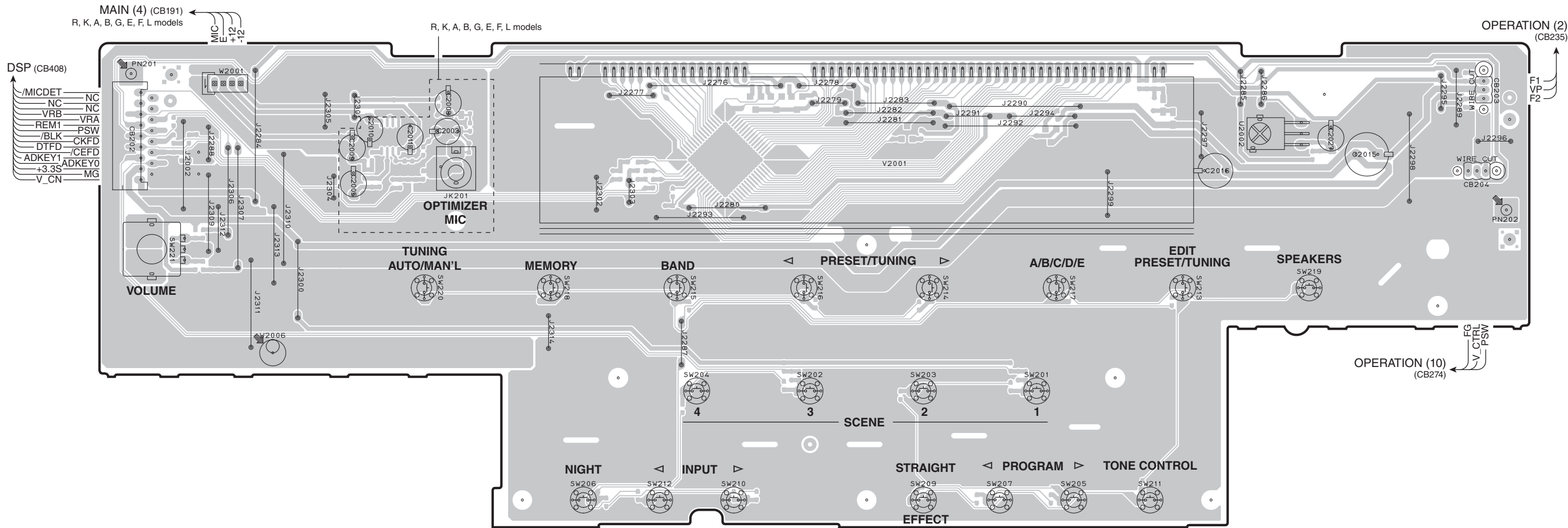
DSP P.C.B. (Side B)



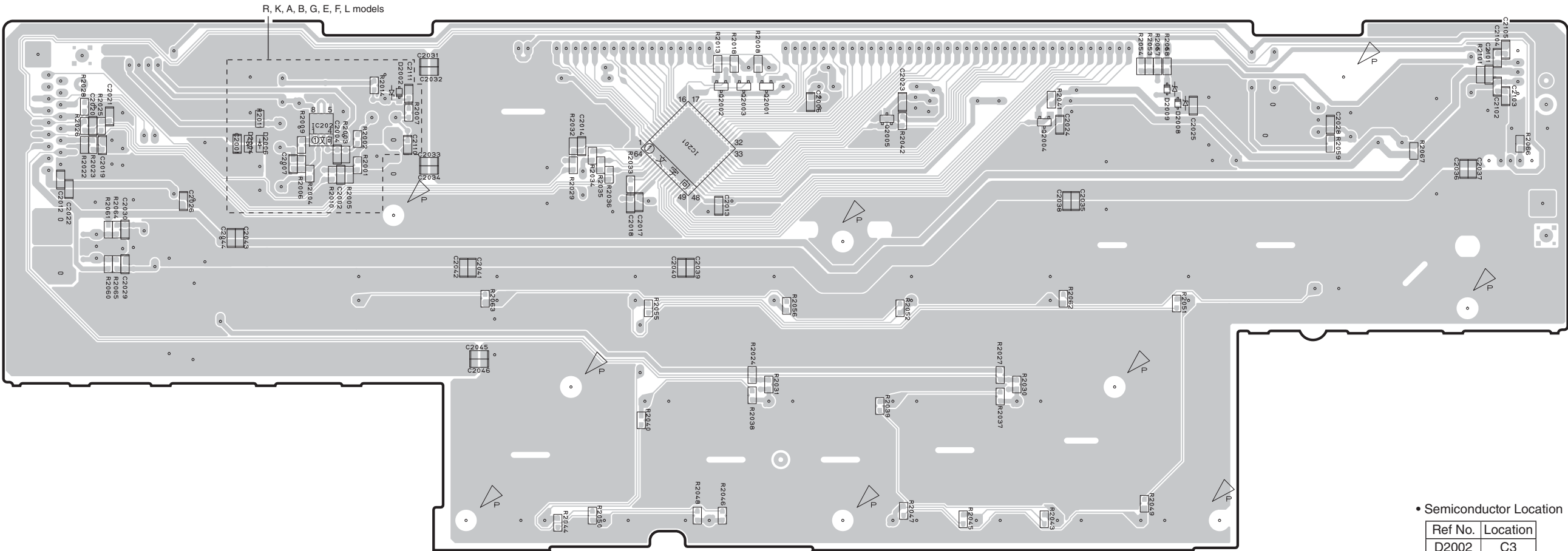
- Semiconductor Location

Ref No.	Location
D407	F3
D409	E3
D602	G4

OPERATION (1) P.C.B. (Side A)



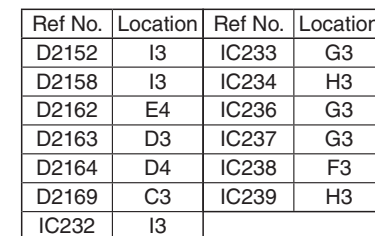
OPERATION (1) P.C.B. (Side B)



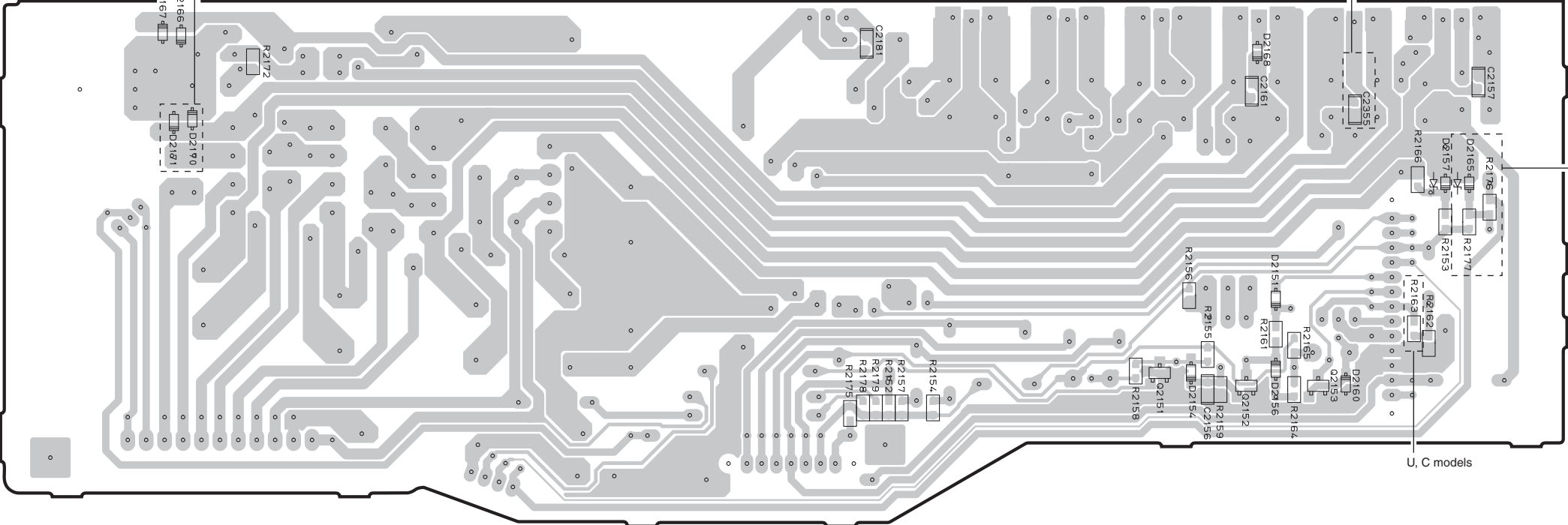
• Semiconductor Location

Ref No.	Location
D2002	C3
D2004	B3
D2006	C3
D2008	H3
D2009	G3
IC201	E4
IC202	C3
Q2001	E3
Q2002	E3
Q2003	E3
Q2004	G3
Q2005	F3

2



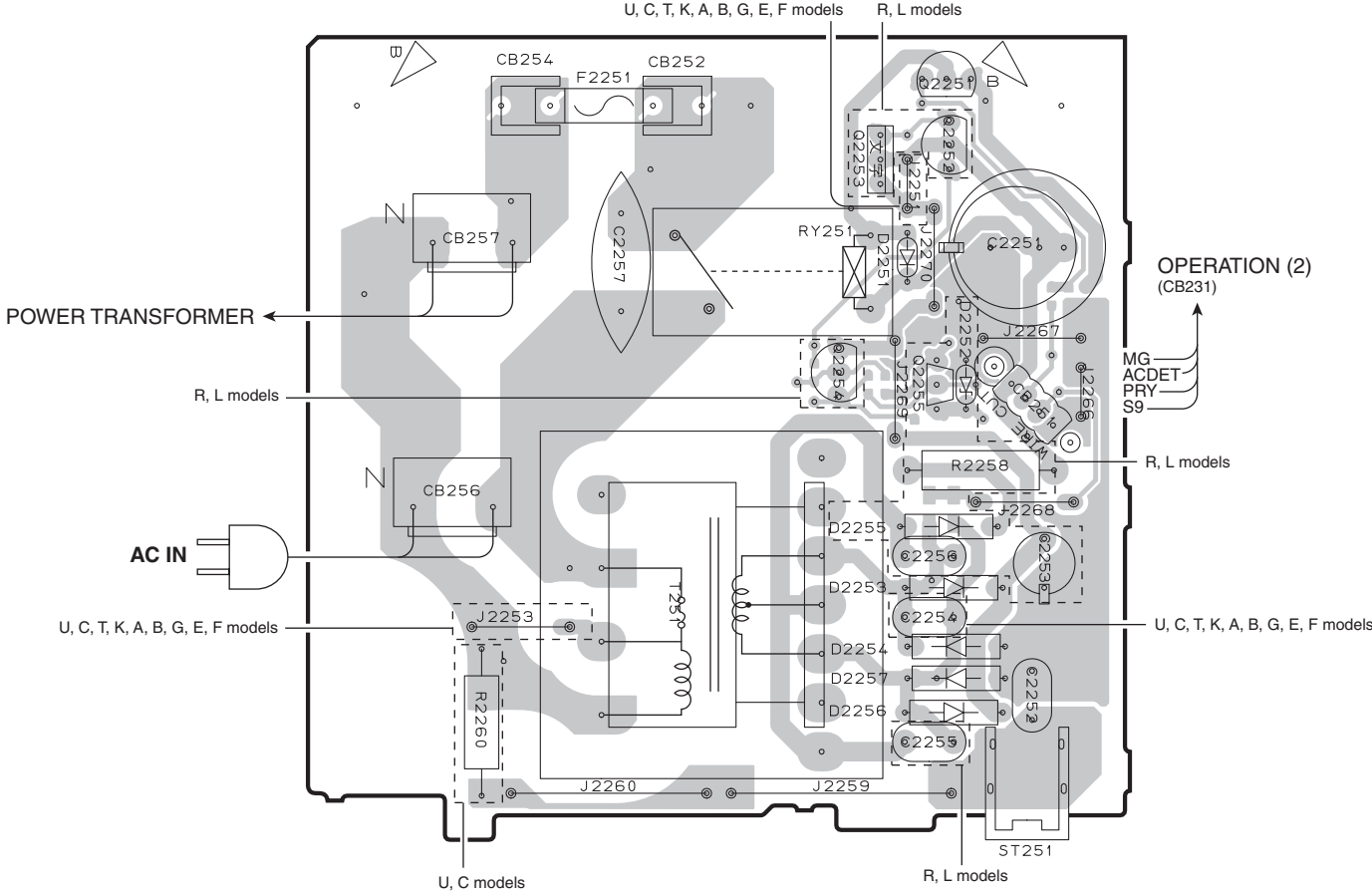
OPERATION (2) P.C.B.



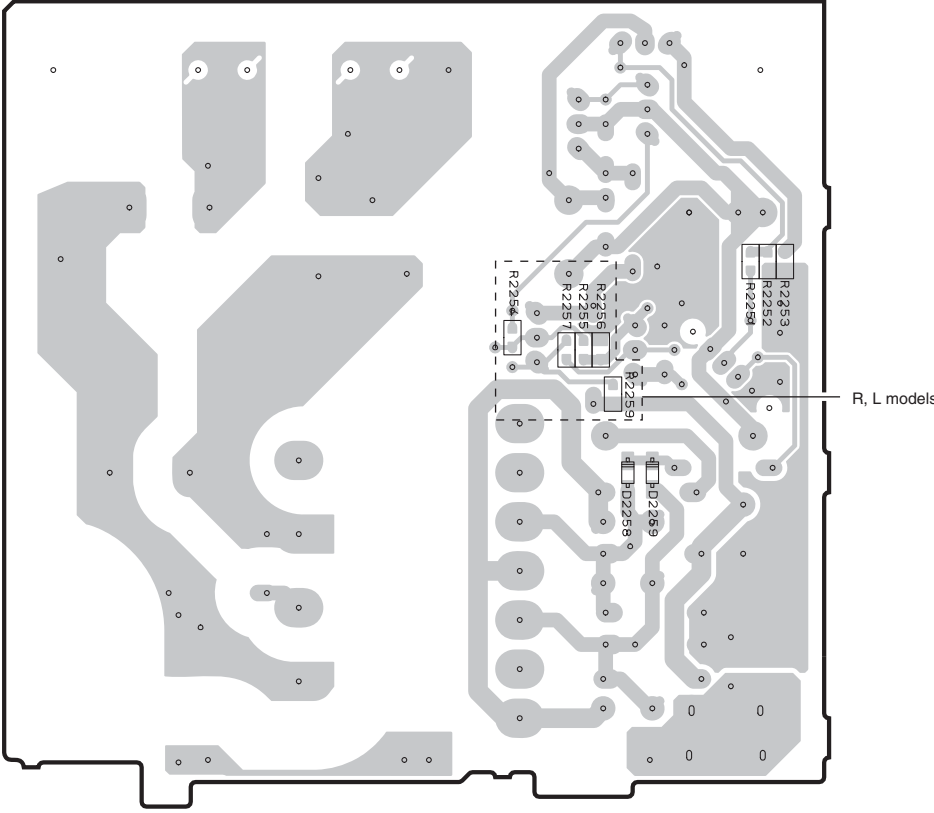
- Semiconductor Location

Ref No.	Location	Ref No.	Location
D2151	G4	D2167	C3
D2154	G4	D2168	G3
D2156	G4	D2170	C3
D2157	H3	D2171	C3
D2160	H4	Q2151	G4
D2165	H3	Q2152	G4
D2166	C3	Q2153	H4

OPERATION (3) P.C.B. (Side A)



OPERATION (3) P.C.B. (Side B)

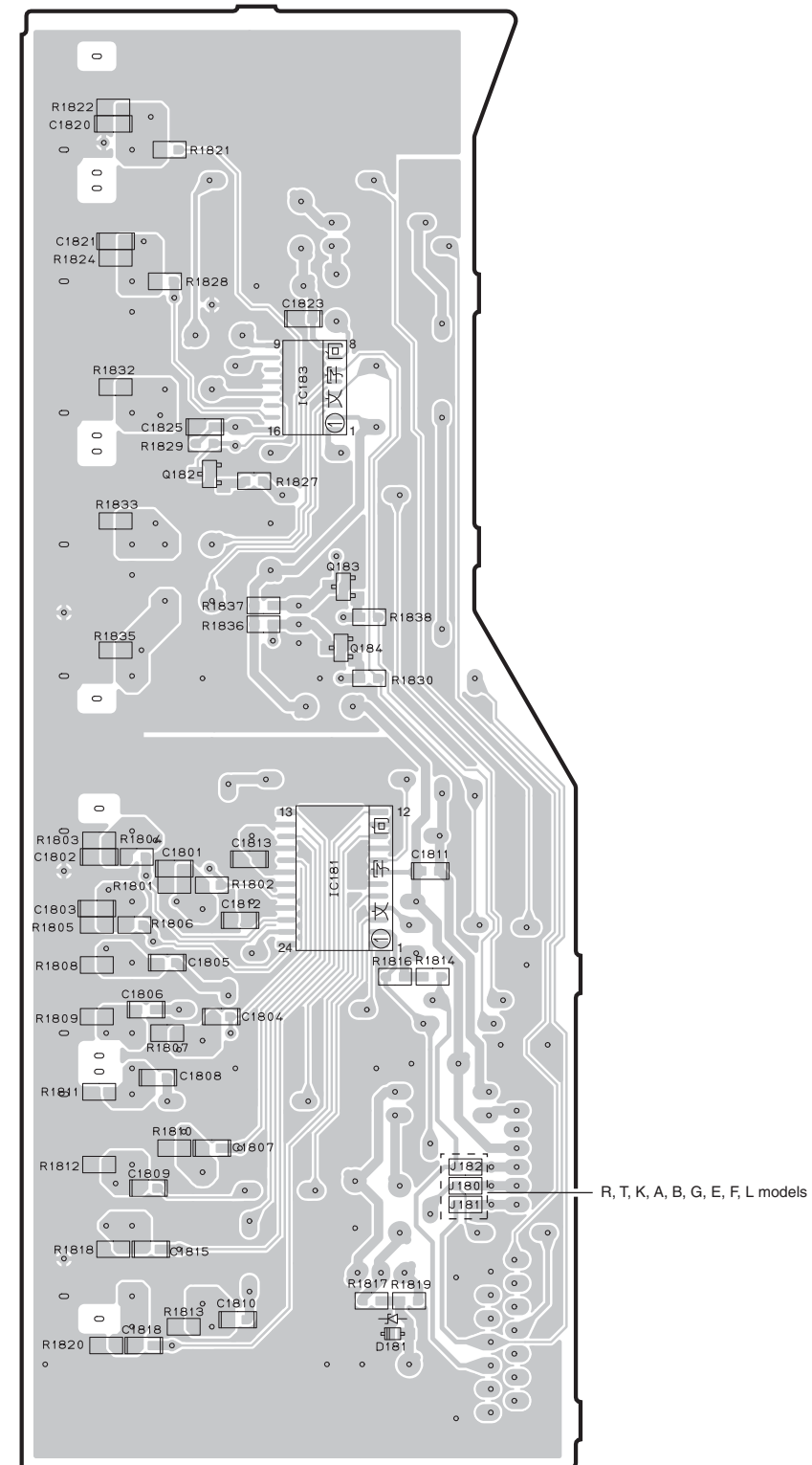
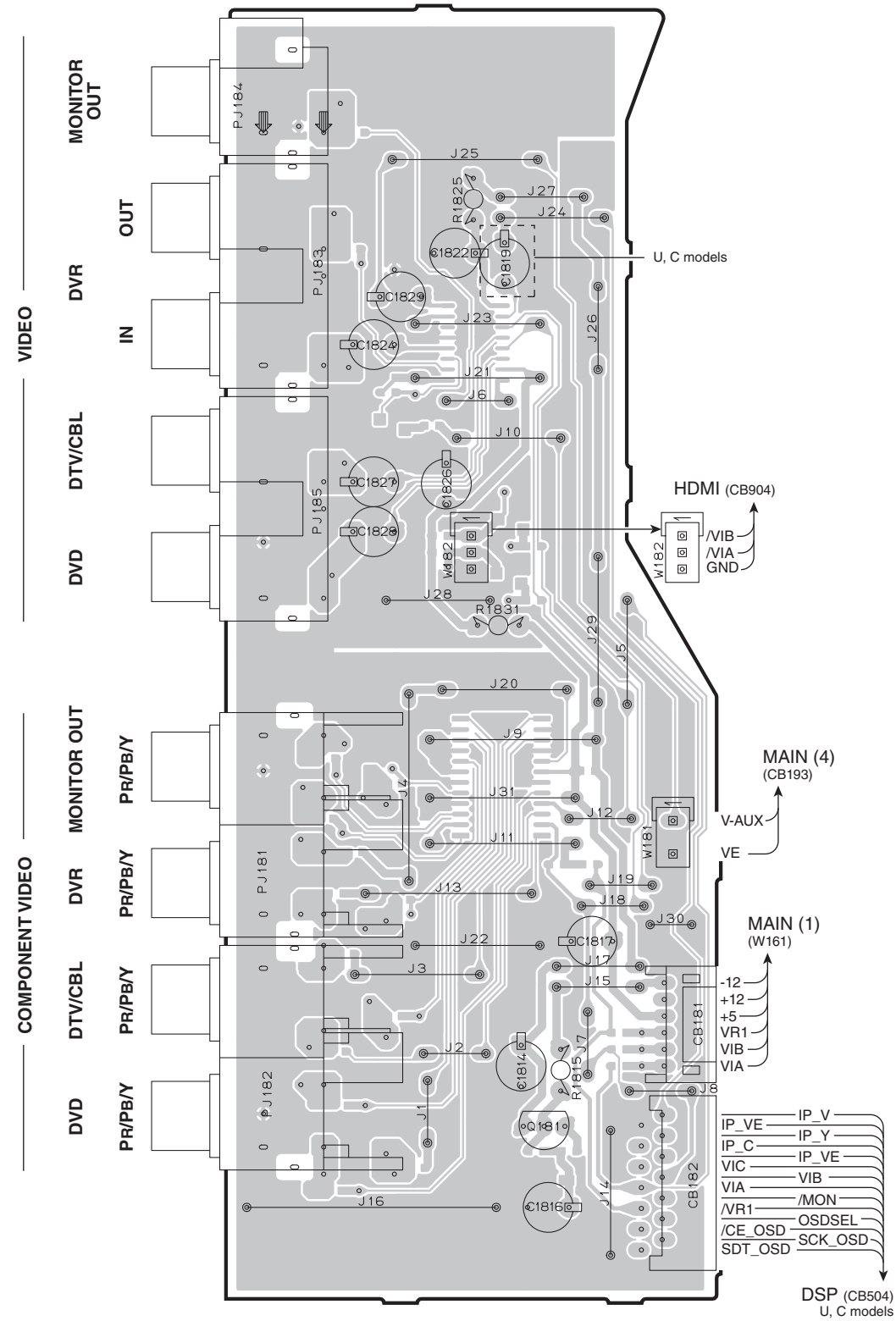


- Semiconductor Location

Ref No.	Location	Ref No.	Location
D2251	D3	D2258	I4
D2252	D4	D2259	I4
D2253	D4	Q2251	D3
D2254	D5	Q2252	D3
D2255	D4	Q2253	D3
D2256	D5	Q2254	D4
D2257	D5	Q2255	D4

OPERATION (4) P.C.B. (Side A)

OPERATION (4) P.C.B. (Side B)

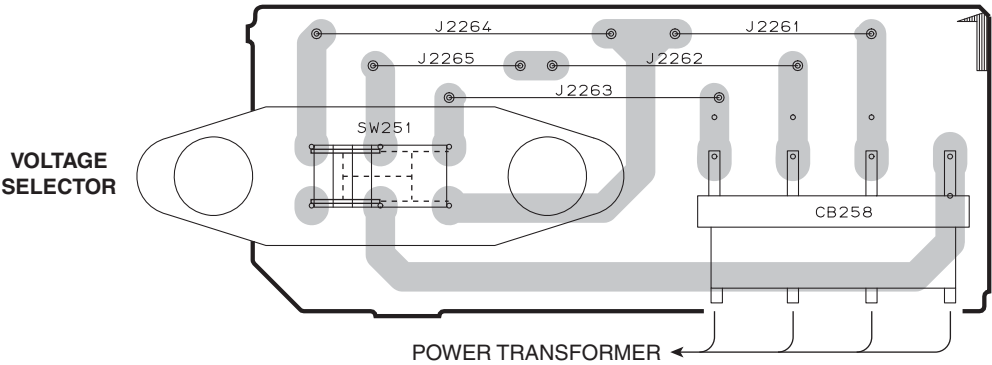


- Semiconductor Location

Ref No.	Location
D181	G6
IC181	G5
IC183	G3
Q181	C6
Q182	G3
Q183	G4
Q184	G4

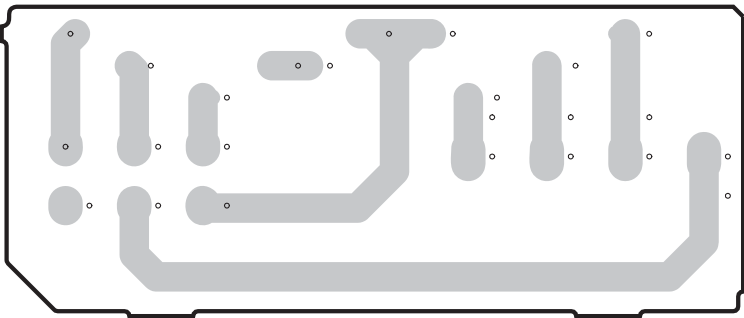
1

OPERATION (5) P.C.B. (Side A)
R, L models



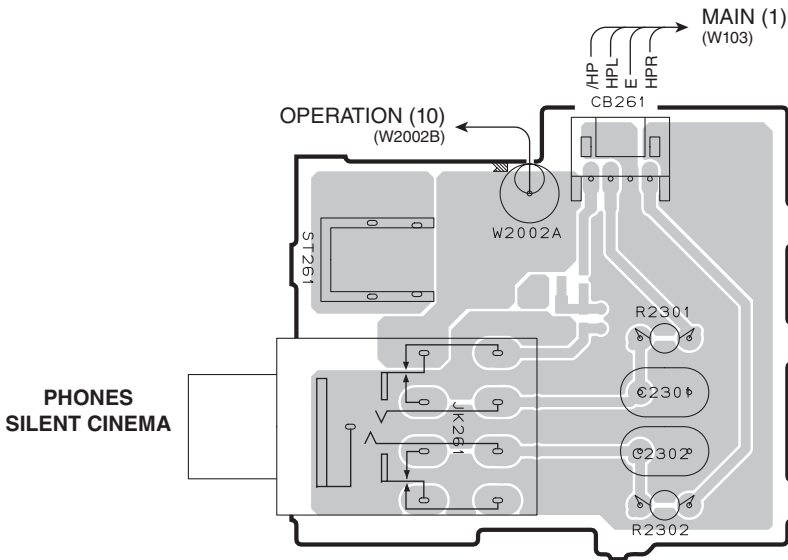
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OPERATION (5) P.C.B. (Side B)



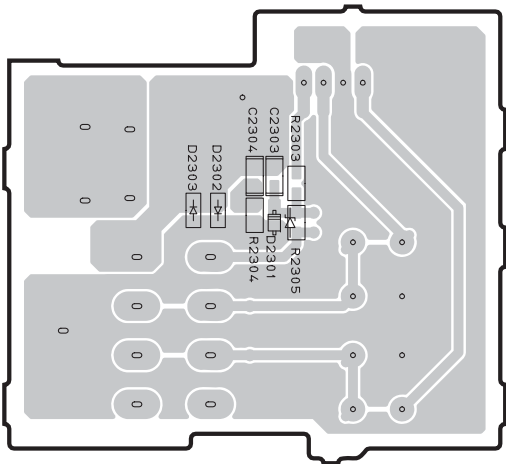
3

OPERATION (6) P.C.B. (Side A)



5

OPERATION (6) P.C.B. (Side B)



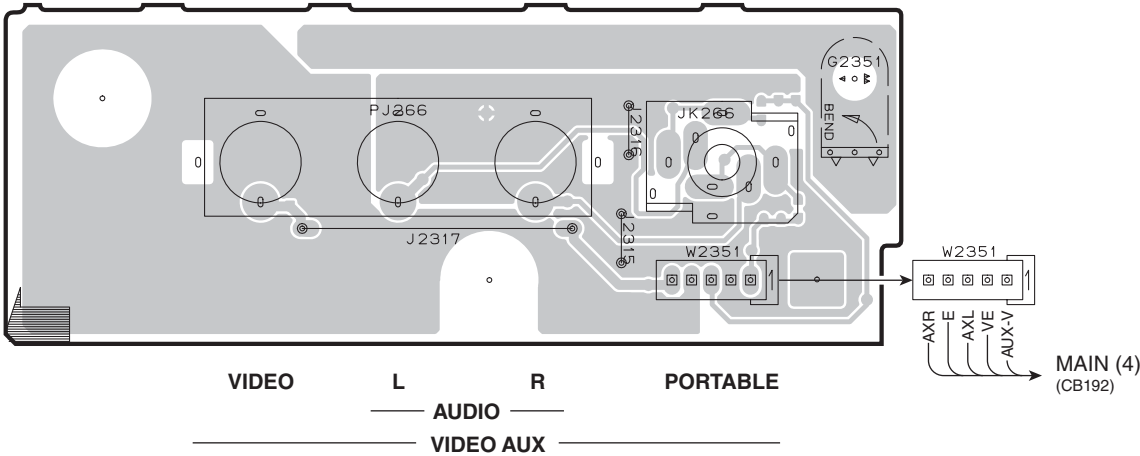
6

• Semiconductor Location

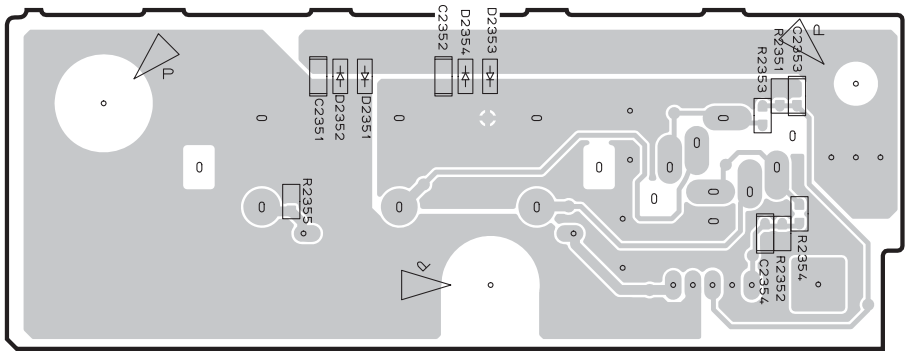
Ref No.	Location
D2301	H6
D2302	H6
D2303	H6

7

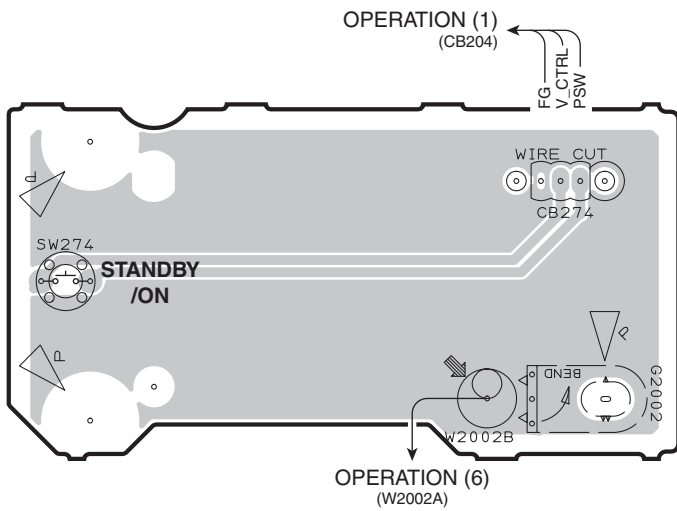
OPERATION (7) P.C.B. (Side A)



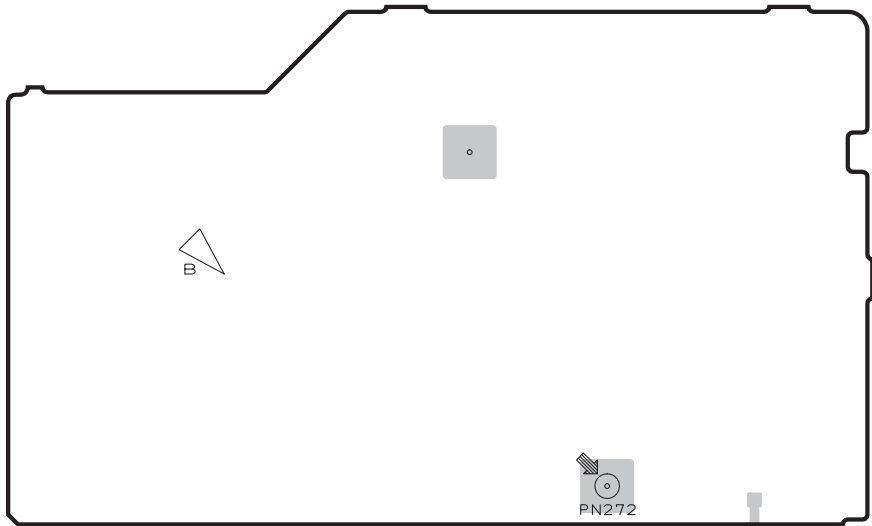
OPERATION (7) P.C.B. (Side B)



OPERATION (10) P.C.B. (Side A)



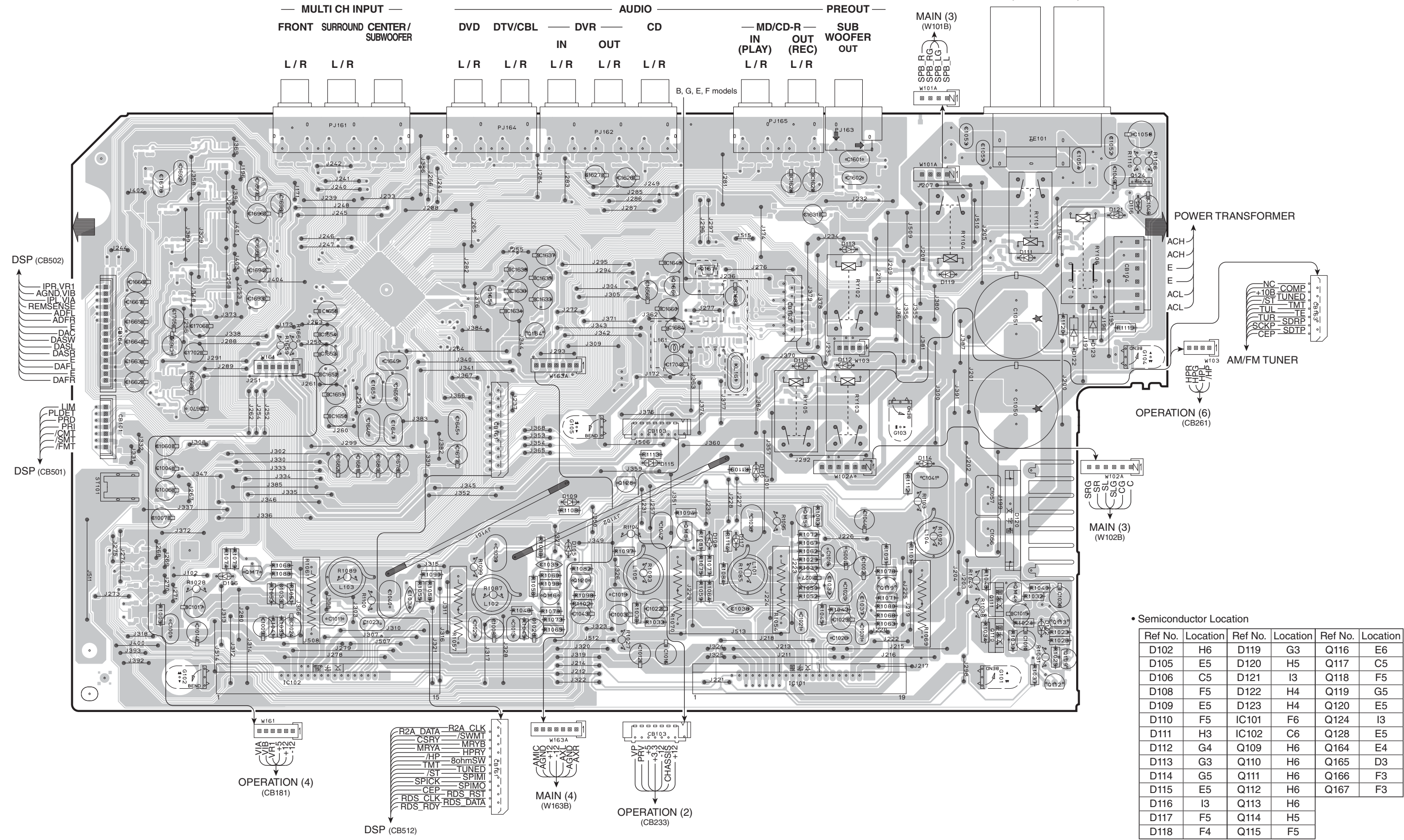
OPERATION (11) P.C.B. (Side A)



• Semiconductor Location

Ref No.	Location
D2351	H2
D2352	H2
D2353	H2
D2354	H2

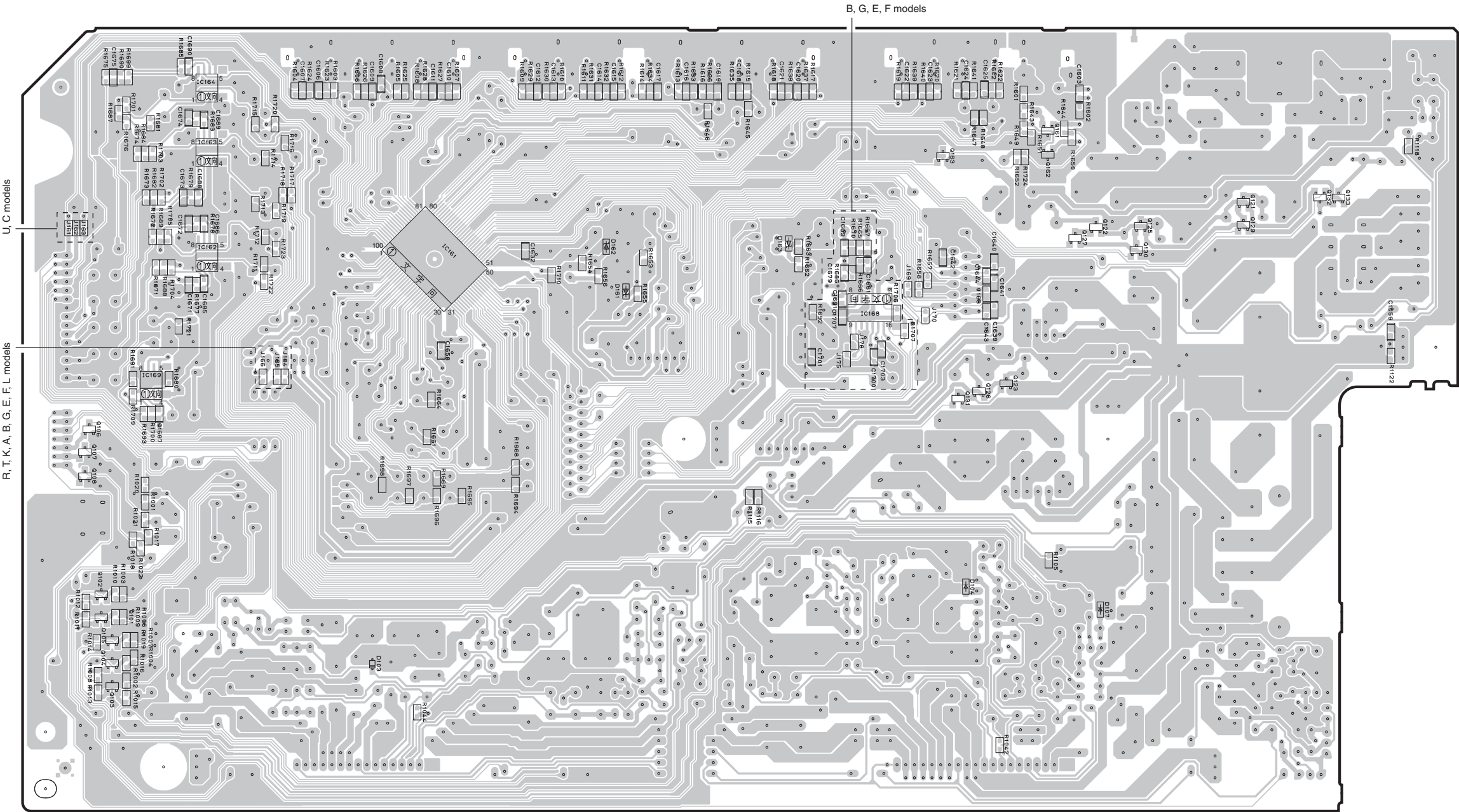
MAIN (1) P.C.B. (Side A)



• Semiconductor Location

Ref No.	Location	Ref No.	Location	Ref No.	Location
D102	H6	D119	G3	Q116	E6
D105	E5	D120	H5	Q117	C5
D106	C5	D121	I3	Q118	F5
D108	F5	D122	H4	Q119	G5
D109	E5	D123	H4	Q120	E5
D110	F5	IC101	F6	Q124	I3
D111	H3	IC102	C6	Q128	E5
D112	G4	Q109	H6	Q164	E4
D113	G3	Q110	H6	Q165	D3
D114	G5	Q111	H6	Q166	F3
D115	E5	Q112	H6	Q167	F3
D116	I3	Q113	H6		
D117	F5	Q114	H5		
D118	F4	Q115	F5		

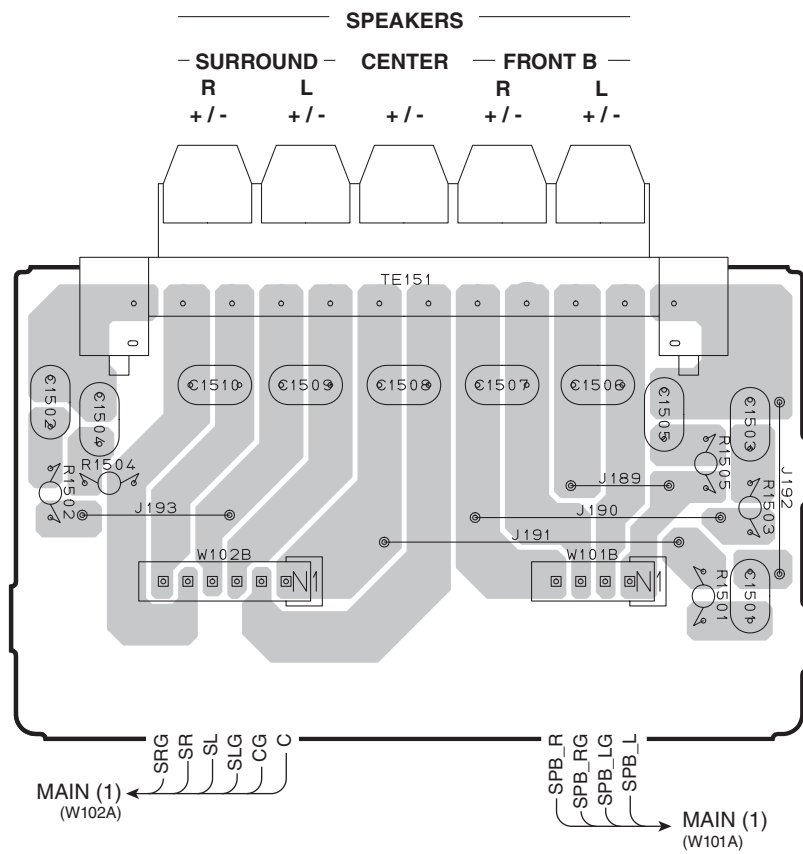
MAIN (1) P.C.B. (Side B)



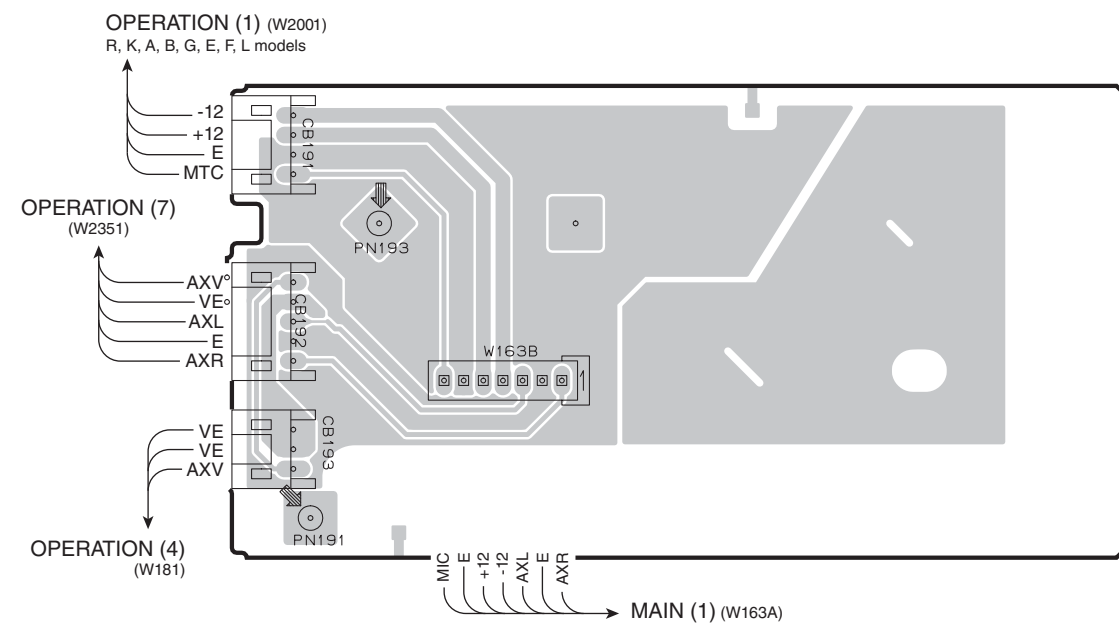
• Semiconductor Location

Ref No.	Location
D103	C6
D104	F5
D107	G5
D161	D4
D162	D3
D163	E3
IC161	C3
IC162	B3
IC163	B3
IC164	B3
IC168	F4
IC169	B4
Q101	B5
Q102	B5
Q103	B6
Q104	B6
Q105	B5
Q106	B4
Q107	B4
Q108	B5
Q121	H3
Q122	G3
Q123	F4
Q125	G3
Q126	F4
Q127	G3
Q129	H3
Q130	G3
Q131	F4
Q132	H3
Q133	H3
Q161	G3
Q162	G3
Q163	F3

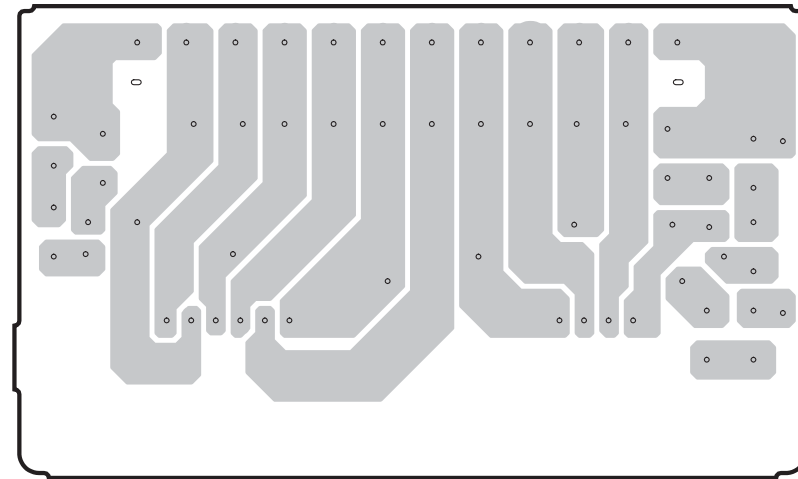
MAIN (3) P.C.B. (Side A)



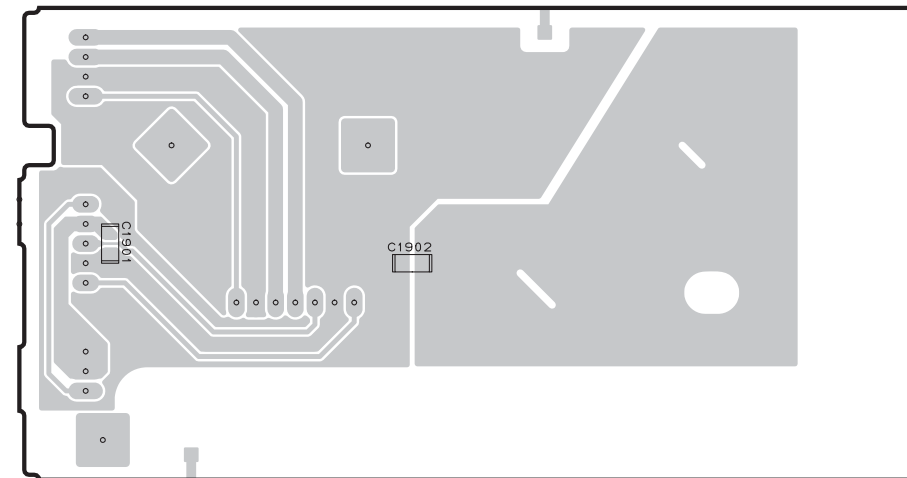
MAIN (4) P.C.B. (Side A)



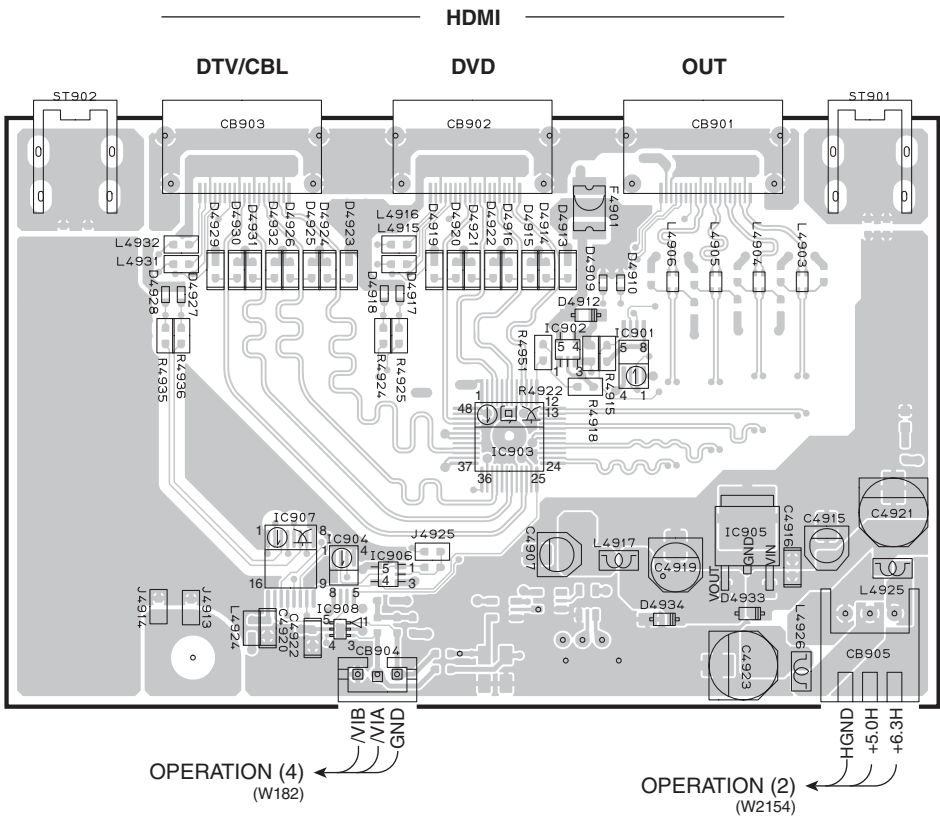
MAIN (3) P.C.B. (Side B)



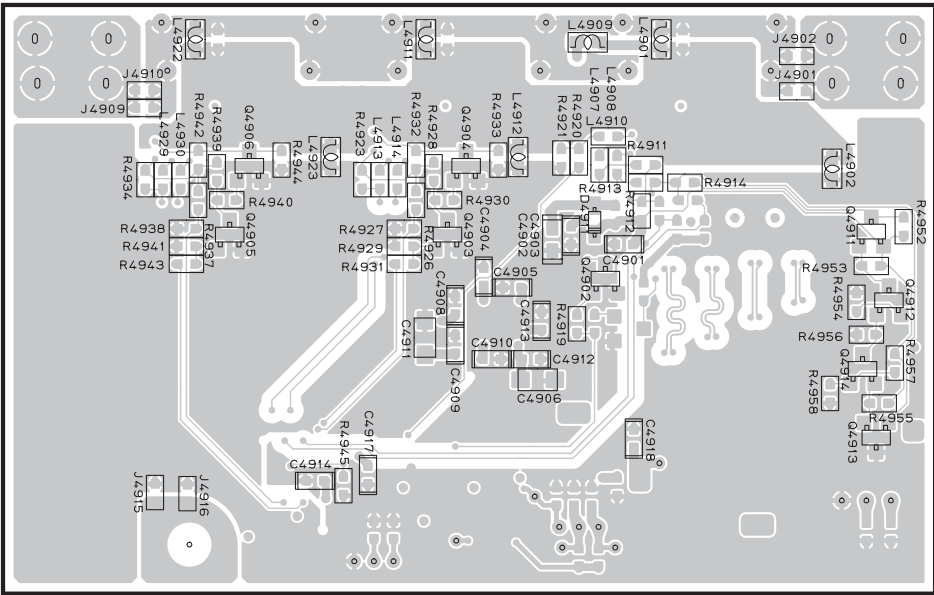
MAIN (4) P.C.B. (Side B)



HDMI P.C.B. (Side A)



HDMI P.C.B. (Side B)

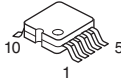
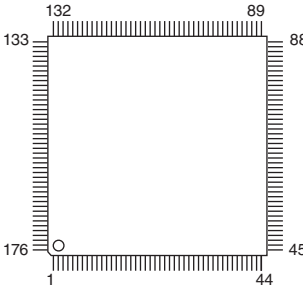
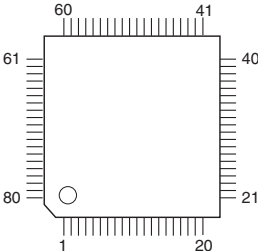
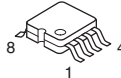
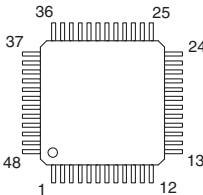
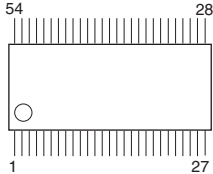
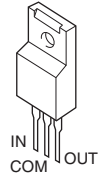
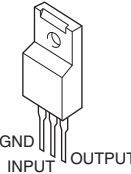
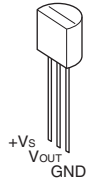
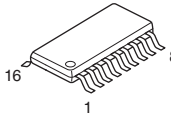
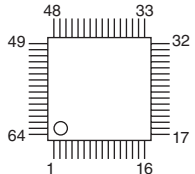
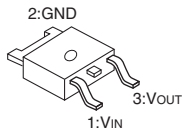
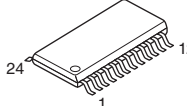
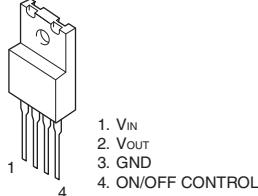
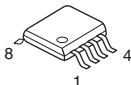
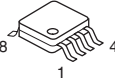
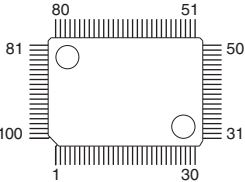
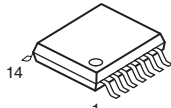
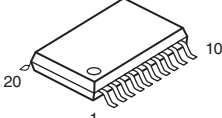
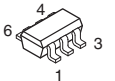
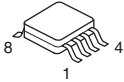
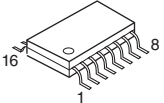
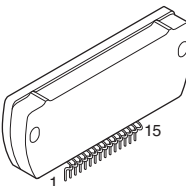
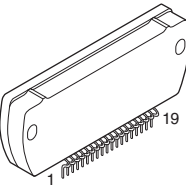


• Semiconductor Location

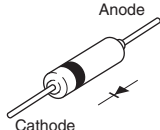
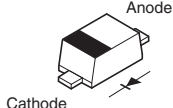
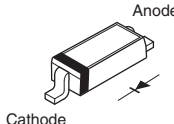
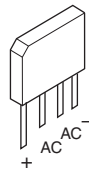
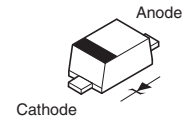
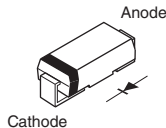
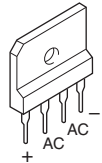
Ref No.	Location
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D4910	C4
D4911	H4
D4912	C4
D4913	C4
D4914	C4
D4915	C4
D4916	C4
D4917	C4
D4918	C4
D4919	C4
D4920	C4
D4921	C4
D4922	C4
D4923	B4
D4924	B4
D4925	B4
D4926	B4
D4927	B4
D4928	B4
D4929	B4
D4930	B4
D4931	B4
D4932	B4
D4933	D5
D4934	C5
IC901	C4
IC902	C4
IC903	C4
IC904	B5
IC905	D5
IC906	C5
IC907	B5
IC908	B5
Q4902	H4
Q4903	G4
Q4904	G4
Q4905	G4
Q4906	G4
Q4911	I4
Q4912	I4
Q4913	I5
Q4914	I4

PIN CONNECTION DIAGRAMS

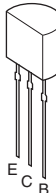
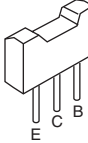
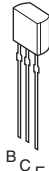
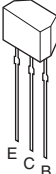
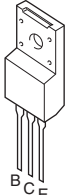
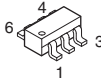
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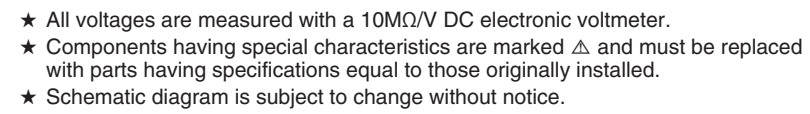
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CXB1442AR-T4 	K4S641632K-UC60000 	KIA7805API KIA7812API 	KIA7912PI 	
LM61CIZ 	LC72725KM NJM2595M (TE1) SN74CB3Q3257PWR 	M66003-0131FP-R 	NJM2867F3-05 	
NJM2885DL1-33 	NJM2586AM 	NJM2388F33 	NJM4565M 	
PCA9517DP 	R2A15218FP 	SN74AHC02PWR SN74AHCT08PWR SN74LV08APWR SN74LVU04APWR 	SN74LV573APWR 	SN74LVC1G08DCKR 
SN74LVC2G17DCKR 	SN74LVC3G04DCTR 	SN74LV4051APWR 	STK433-130-E 	STK433-330-E 

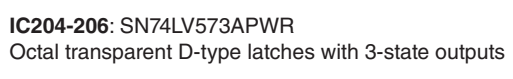
Diodes

1SS133, 176 1SS270A 1T2 MTZJ4.7A MTZJ33B 	1SS355 RB500V-40 RB501V-40 	KDS160-RTK 	KBP103G 1.0A 200V 
MA8075-H MA8100-H UDZ5.1B UDZS3.3BTE-17 UDZS5.6BTE-17 UDZS9.1B 	RB160L-40 TE25 	TS6P03G 6.0A 200V 	

Transistors

2SA1015 2N5401C 2N5551C 	2SA1037K 2SC2412K 2SC3326 2SD1938F 	2SA1708 	2SC1740S 	2SC1815 
KRC102M-AT 	KRA102S-RTK/P KRA104S-RTK KRC102S-RTK KRC104S-RTK 	KTA1046-Y-U/P 	RTQ040P02  1. Drain 2. Drain 3. Gate 4. Source 5. Drain 6. Drain	





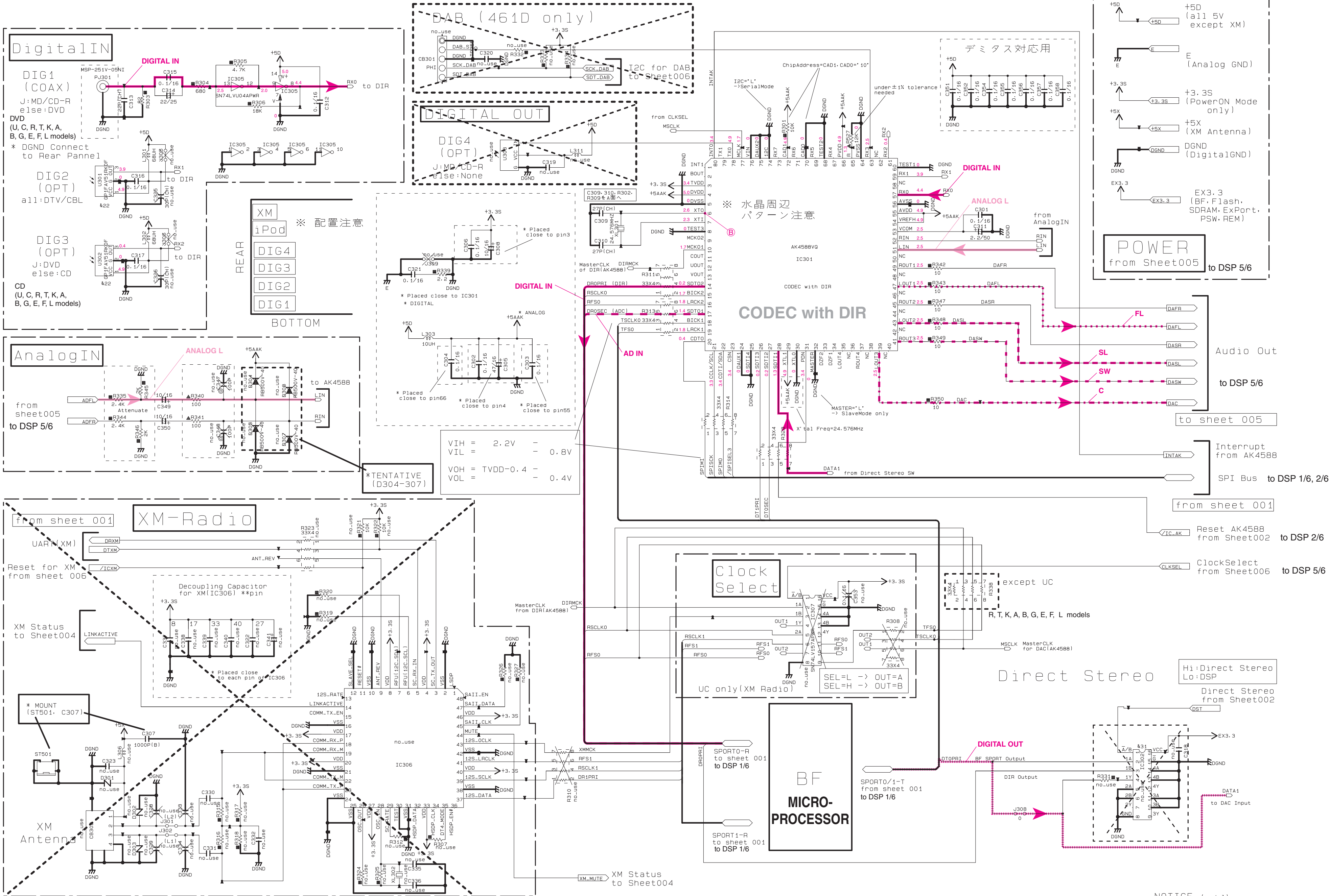
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NOTICE (model)
(J)..... JAPAN
(U)..... U. S. A
(C)..... CANADA
(R)..... GENERAL
(T)..... CHINA
(K)..... KOREA
(A)..... AUSTRALIA
(B)..... BRITISH
(G)..... EUROPE
(L)..... SINGAPORE
(E)..... SOUTH EUROPE
(V)..... TAIWAN
(F)..... RUSSIAN
```

- ★ All voltages are measured with a 10M Ω /V DC electronic voltmeter.
- ★ 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.

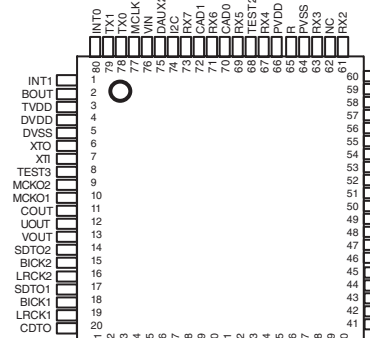
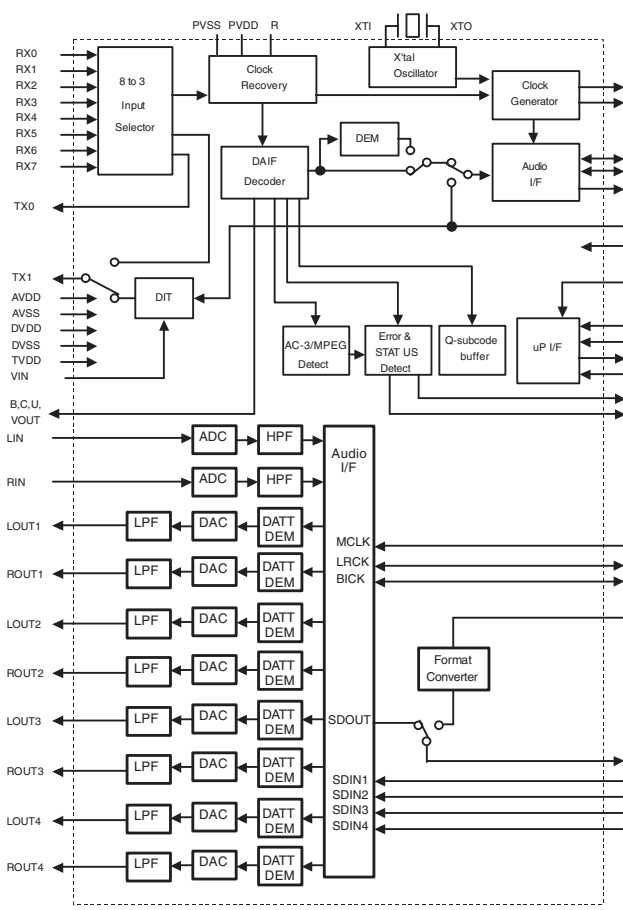
DSP 3/6

Interchangeable Parts at Manufacture-Stage

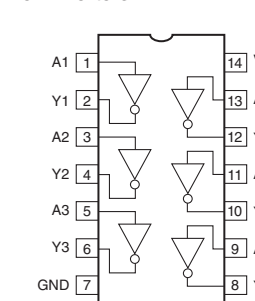
Mark	Reference Parts Number	Parts Name
422	U301-U302	JSR1165
		GP1FAV51RKF



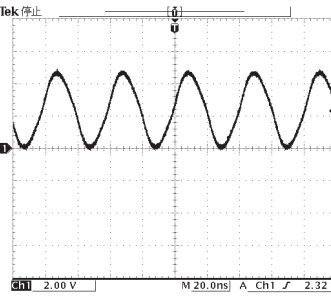
IC301: AK4588VQ
2/8-channel audio CODEC with DIR



IC305: SN74LVU04APWR
Hex inverters



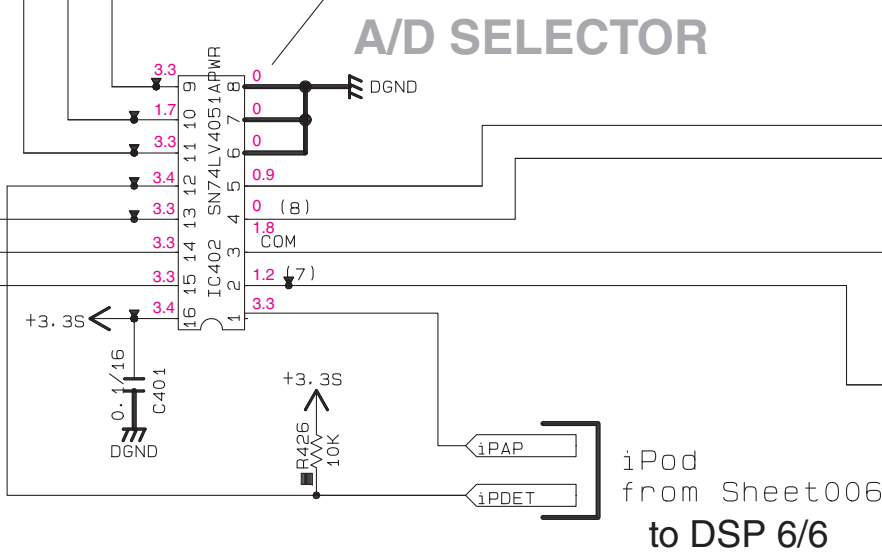
POINT (B) XL301 (Pin 6 of IC301)



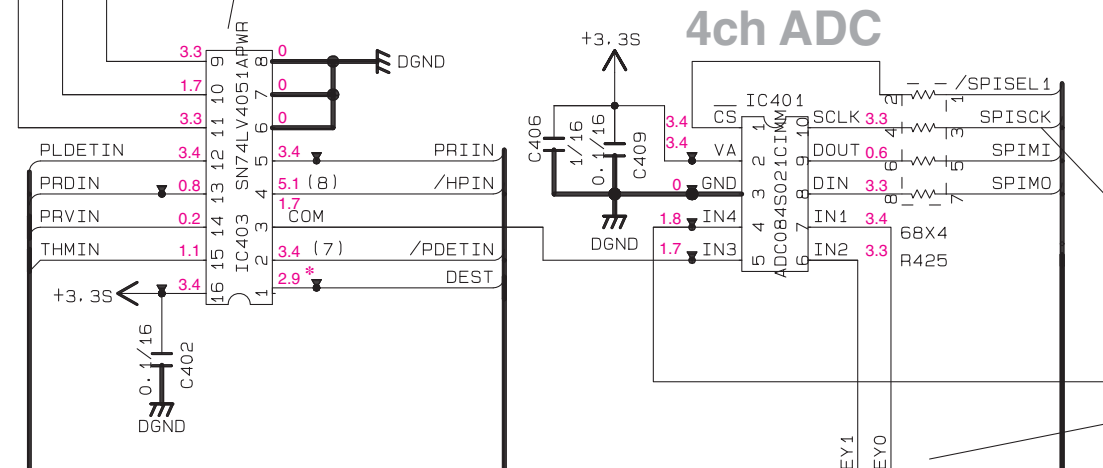
* All voltages are measured with a 10MΩ/V DC electronic voltmeter.
* Components having special characteristics are marked Δ and must be replaced with parts having specifications equal to those originally installed.
* Schematic diagram is subject to change without notice.



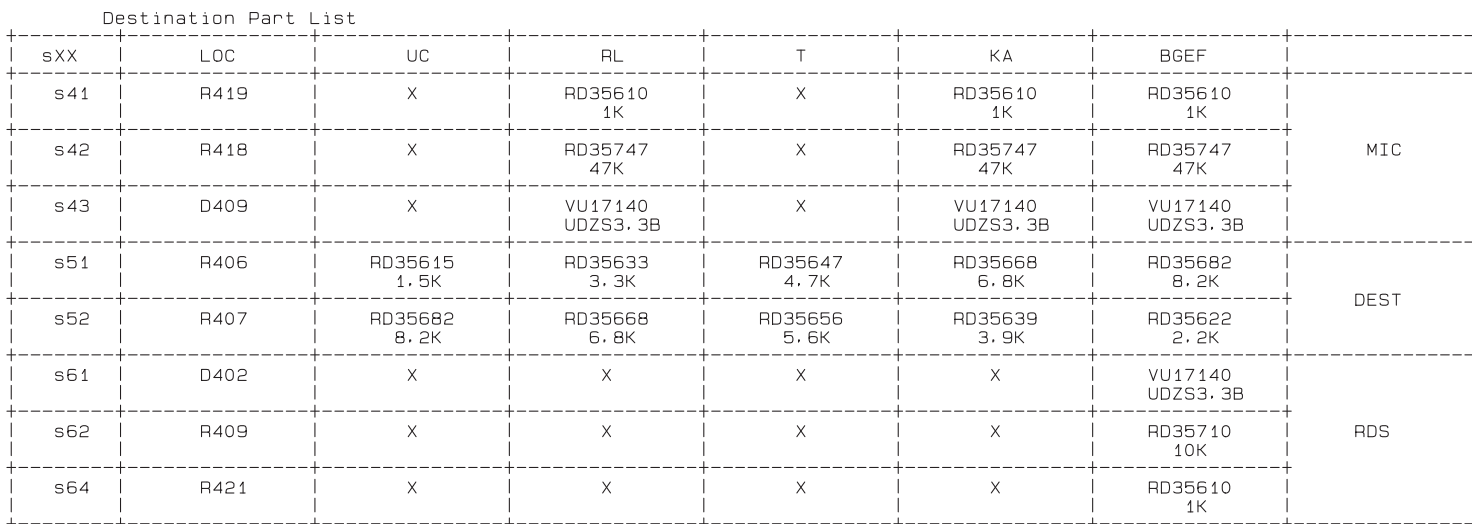
ADSEL			COM
2	1	0	---
L	L	L	/MIC
L	L	H	/ST
L	H	L	/TUNED
L	H	H	1PDET
H	L	L	1PAP
H	L	H	XM-MUTE
H	H	L	DEST2
H	H	H	LINKACTIVE



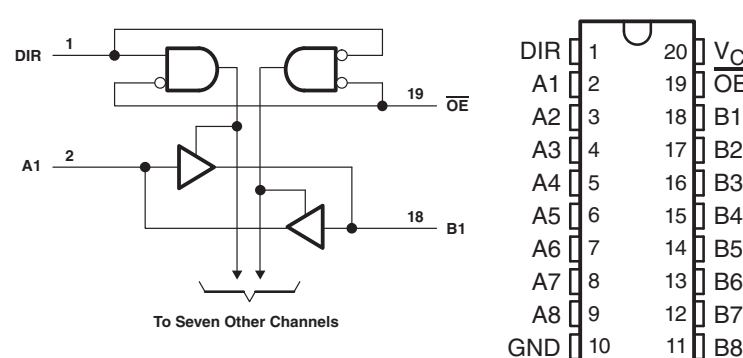
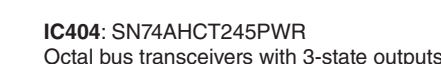
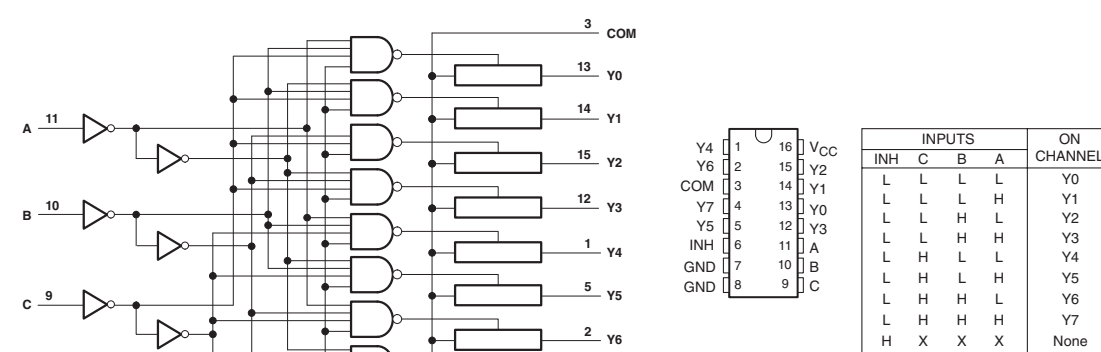
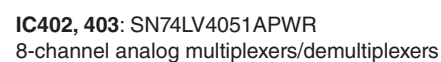
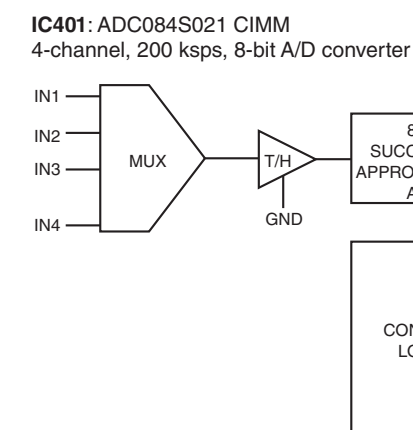
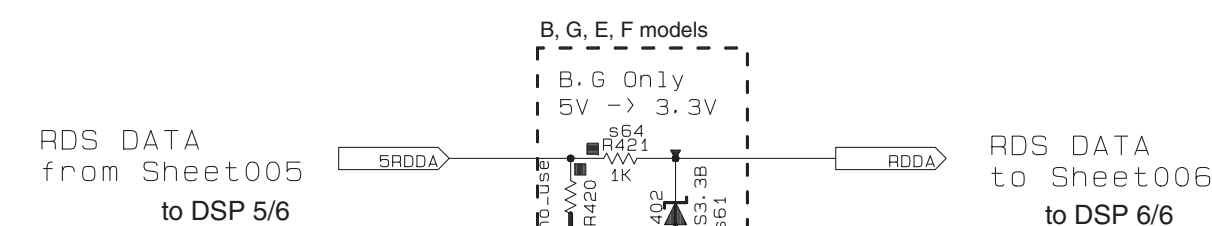
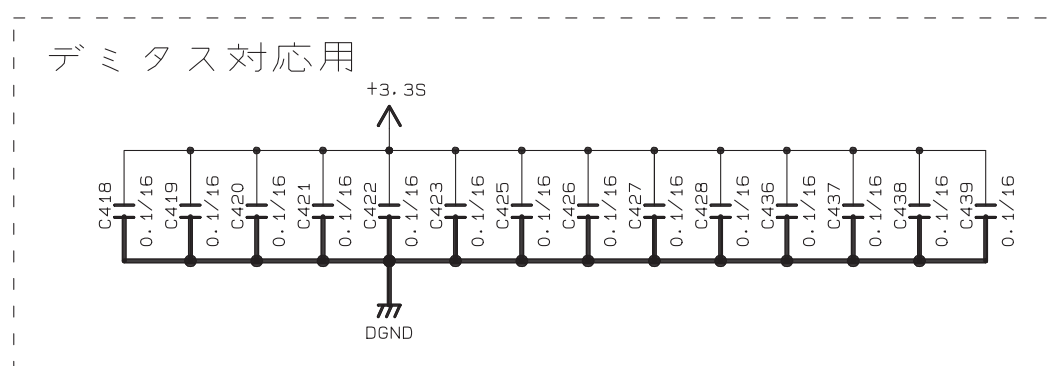
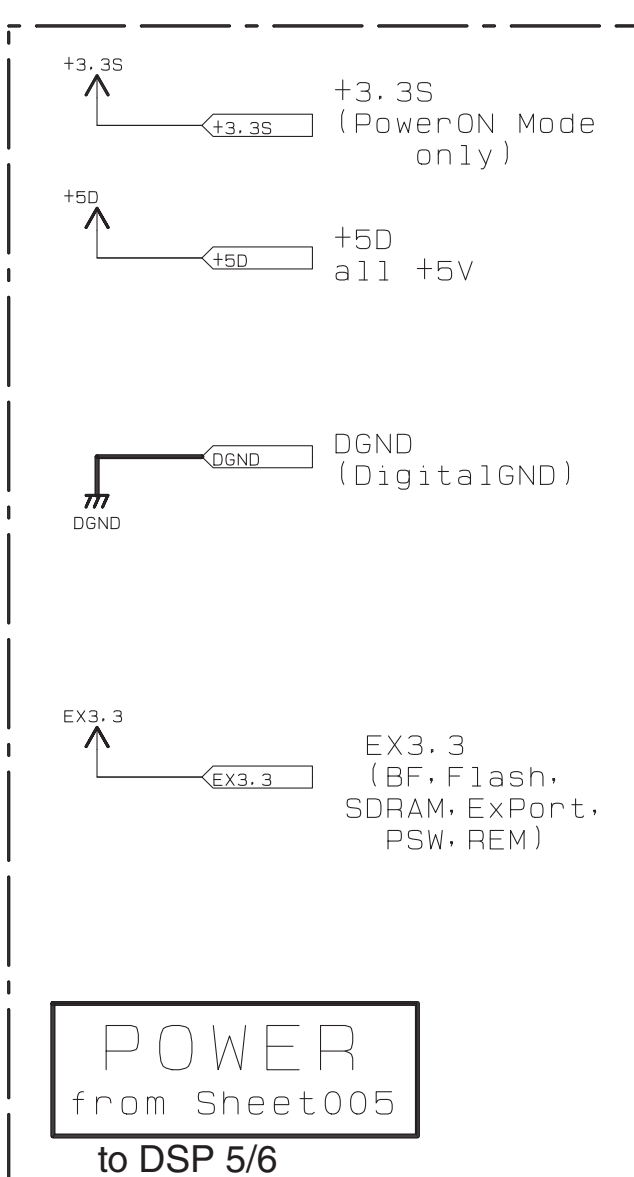
ADSEL	
2	1
L	L
L	L
L	H
L	H
H	L
H	L
H	H
H	H



※ アナログ値(KEY0/1)と
Clockが近接しないよう
パターン注意



* Destination for A/D port						
R406 [ohm]	1.5 k	3.3 k	4.7 k	6.8 k	8.2 k	
R407 [ohm]	8.2 k	6.8 k	5.6 k	3.9 k	2.2 k	
DEST (1 pin) [V]	2.6-3.0	2.0-2.4	1.6-2.0	1.0-1.4	0.5-0.9	
A/D value (3.3 V=255)	200-226	162-182	129-149	83-103	44-64	
Destination	U, C	R, L	T	K, A	B, G, E, F	



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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.

RESISTOR		PARTS NAME
REMARKS	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

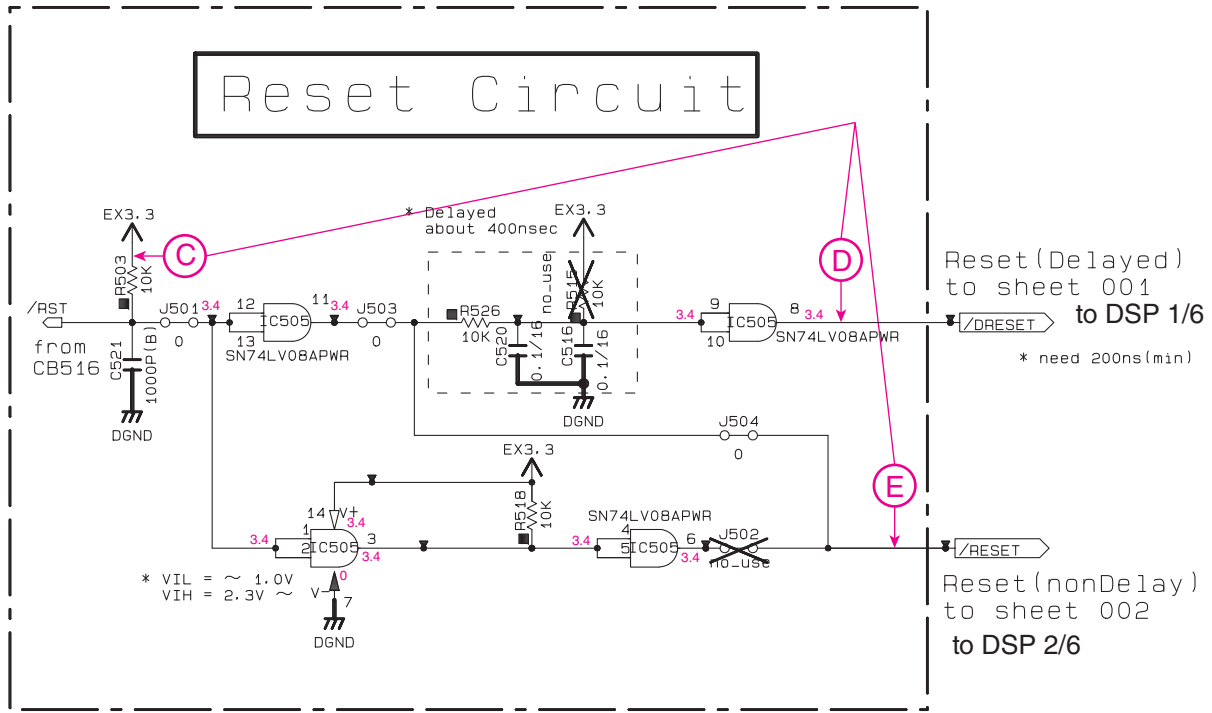
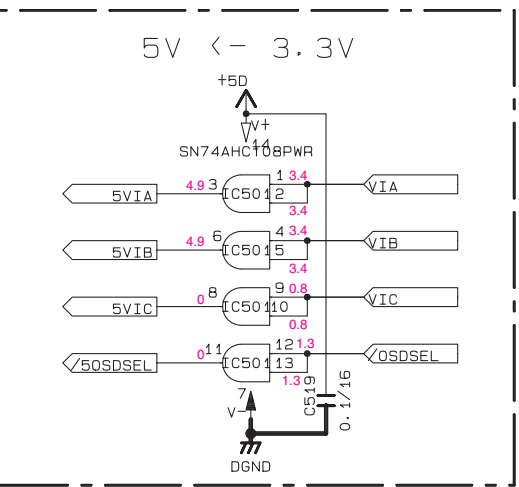
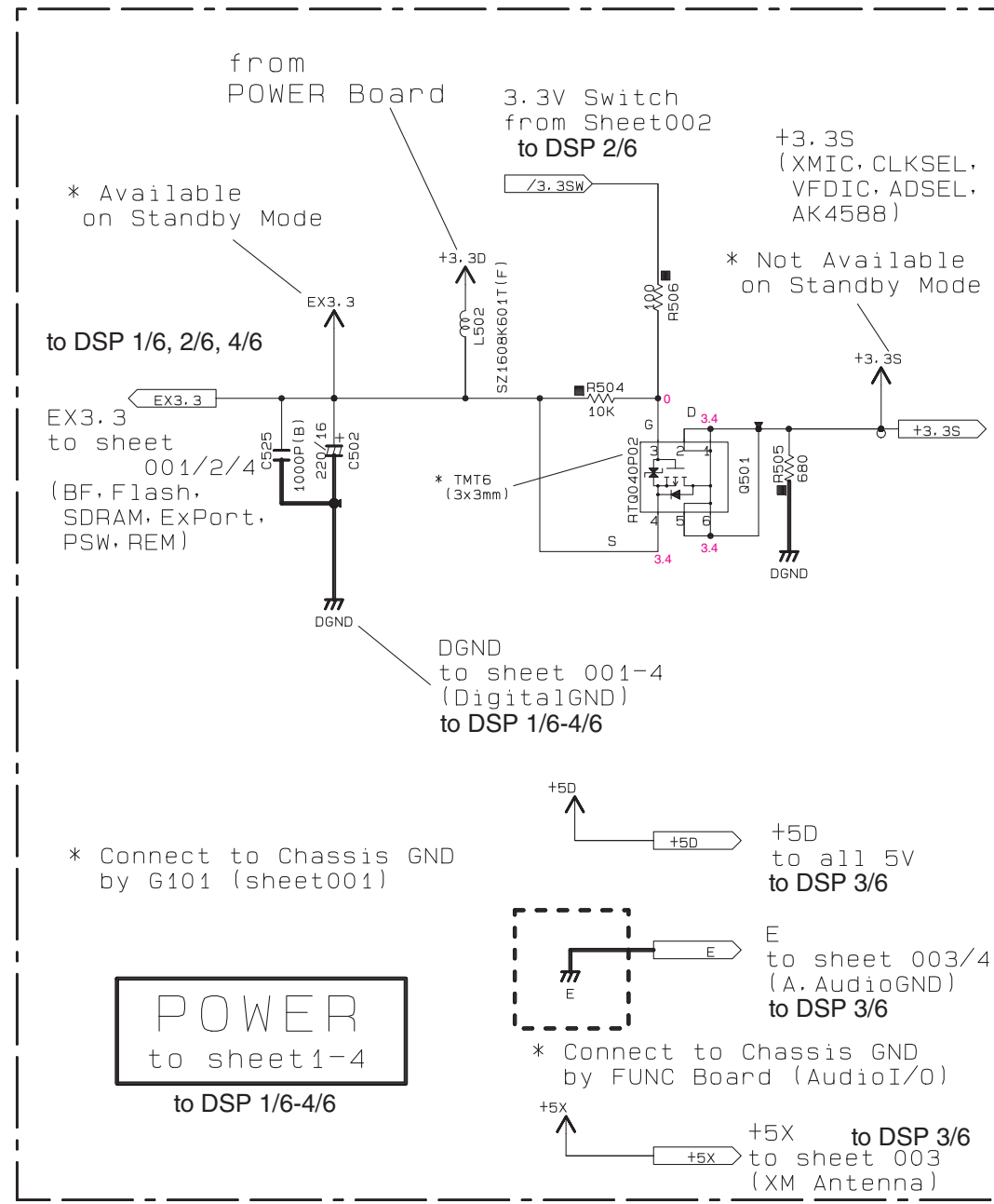
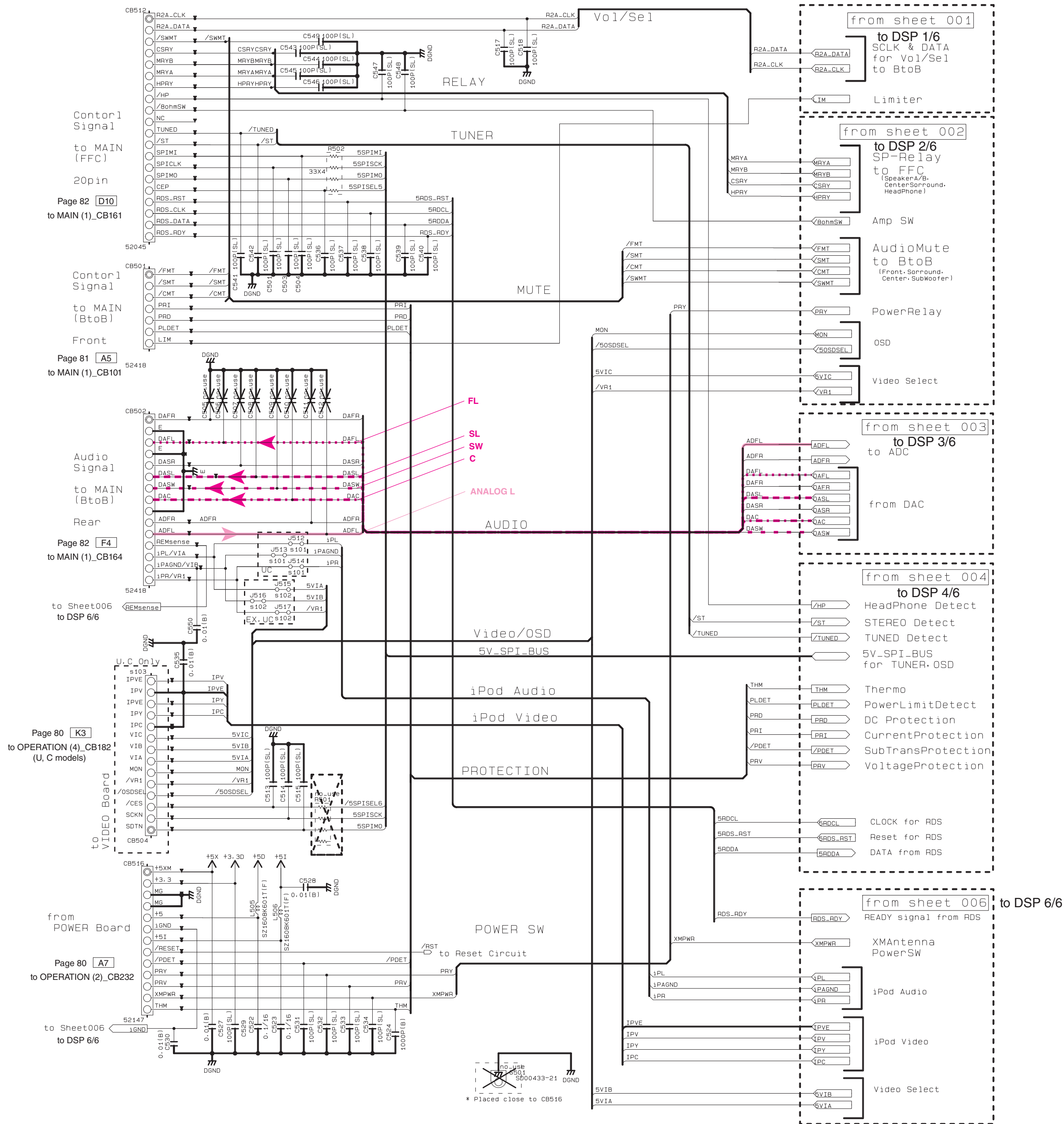
CAPACITOR		
REMARKS	PARTS NAME	
NO MARK	ELECTROLYTIC CAPACITOR	H
⊗	TANTALUM CAPACITOR	
NO MARK	CERAMIC CAPACITOR	H
●	CERAMIC TUBULAR CAPACITOR	
⊙	POLYESTER FILM CAPACITOR	
○	POLYSTYRENE FILM CAPACITOR	
○	MICA CAPACITOR	
○	POLYPROPYLENE FILM CAPACITOR	
⊙	SEMICONDUCTIVE CERAMIC CAPACITOR	
⊙	POLYPHENYLENE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

NOTICE (mode 1)

(J)..... JAPAN
(U)..... U. S. A
(C)..... CANADA
(R)..... GENERAL
(T)..... CHINA
(K)..... KOREA
(A)..... AUSTRALIA
(B)..... BRITISH
(G)..... EUROPE
(L)..... SINGAPORE
(E)..... SOUTH EUROPE
(V)..... TAIWAN
(F)..... RUSSIAN

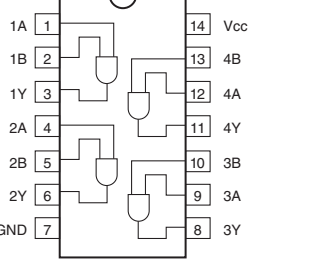
DSP 5/6

1
2
3
4
5
6
7
8
9
10

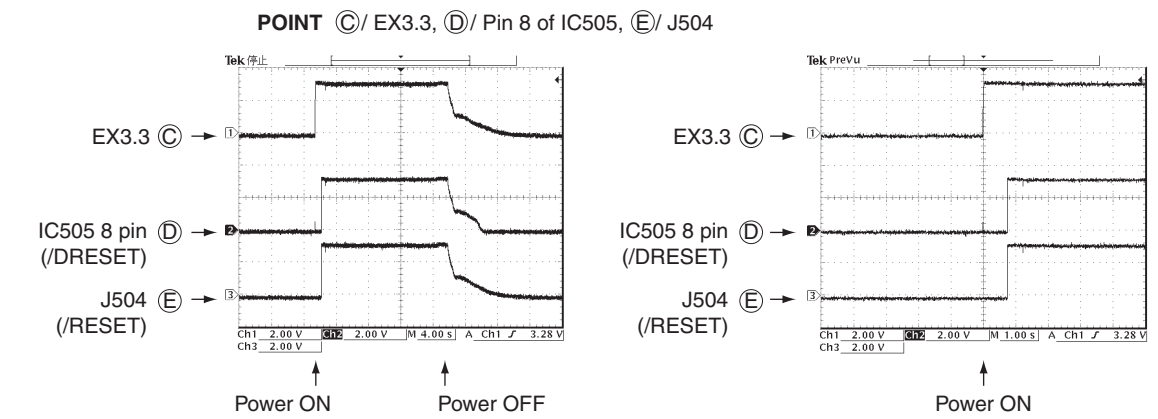
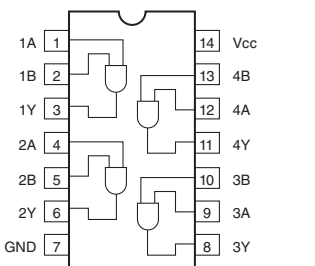


Destination Part List						
xxx	LOC	UC	RL	T	KA	BREF
s101	J514 J512 J513	RD35000 0	X	X	X	X
s102	J517 J516 J515	X	RD35000 0	RD35000 0	RD35000 0	RD35000 0
s103	CB504	VN39490 55049	X	X	X	X

IC501: SN74AHCT08PWR
Quadruple 2-input positive-AND gates



IC505: SN74LV08APWR
Quadruple 2-input positive-AND gate



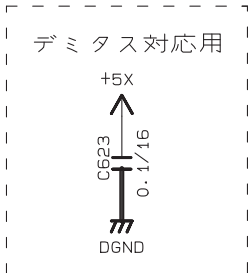
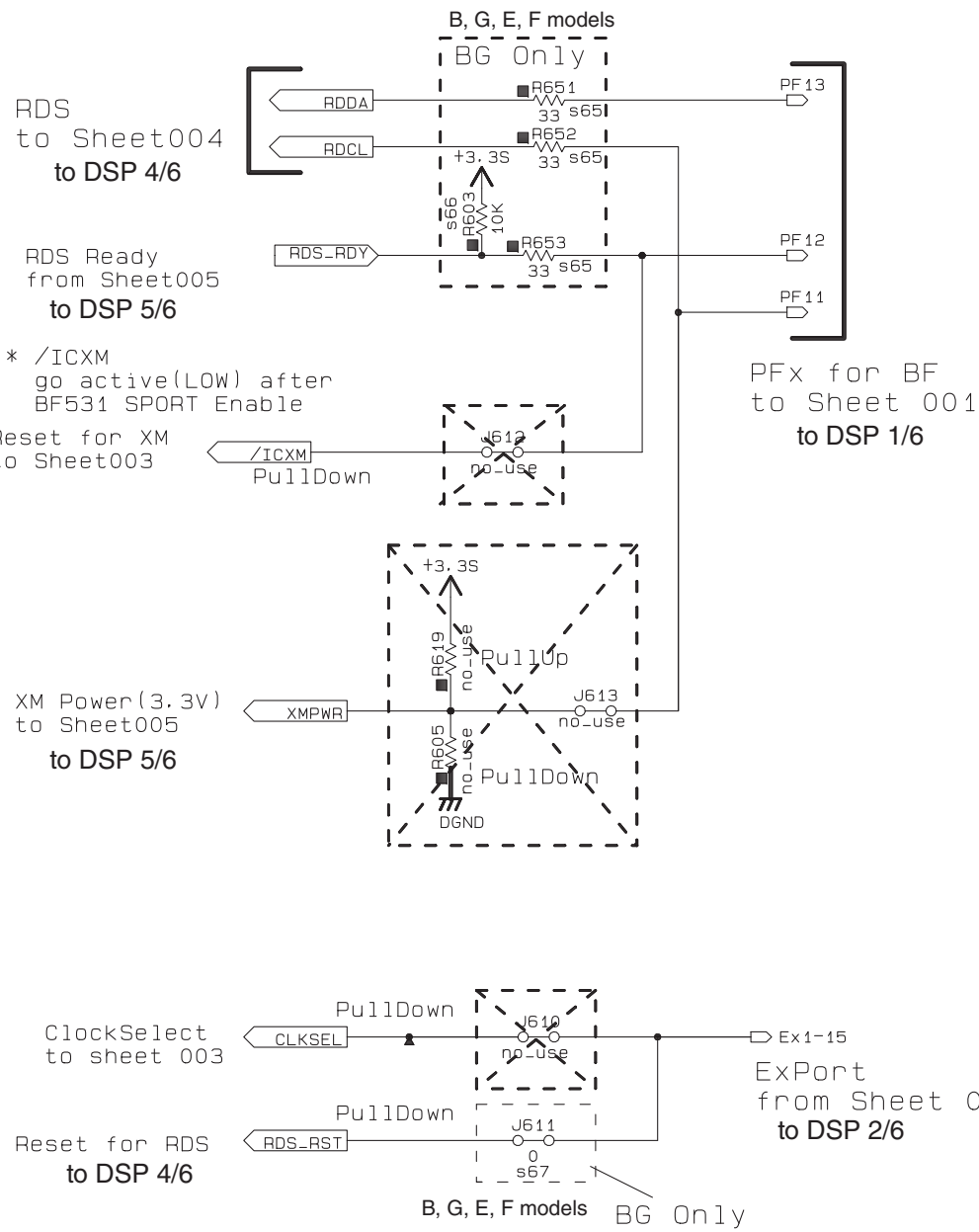
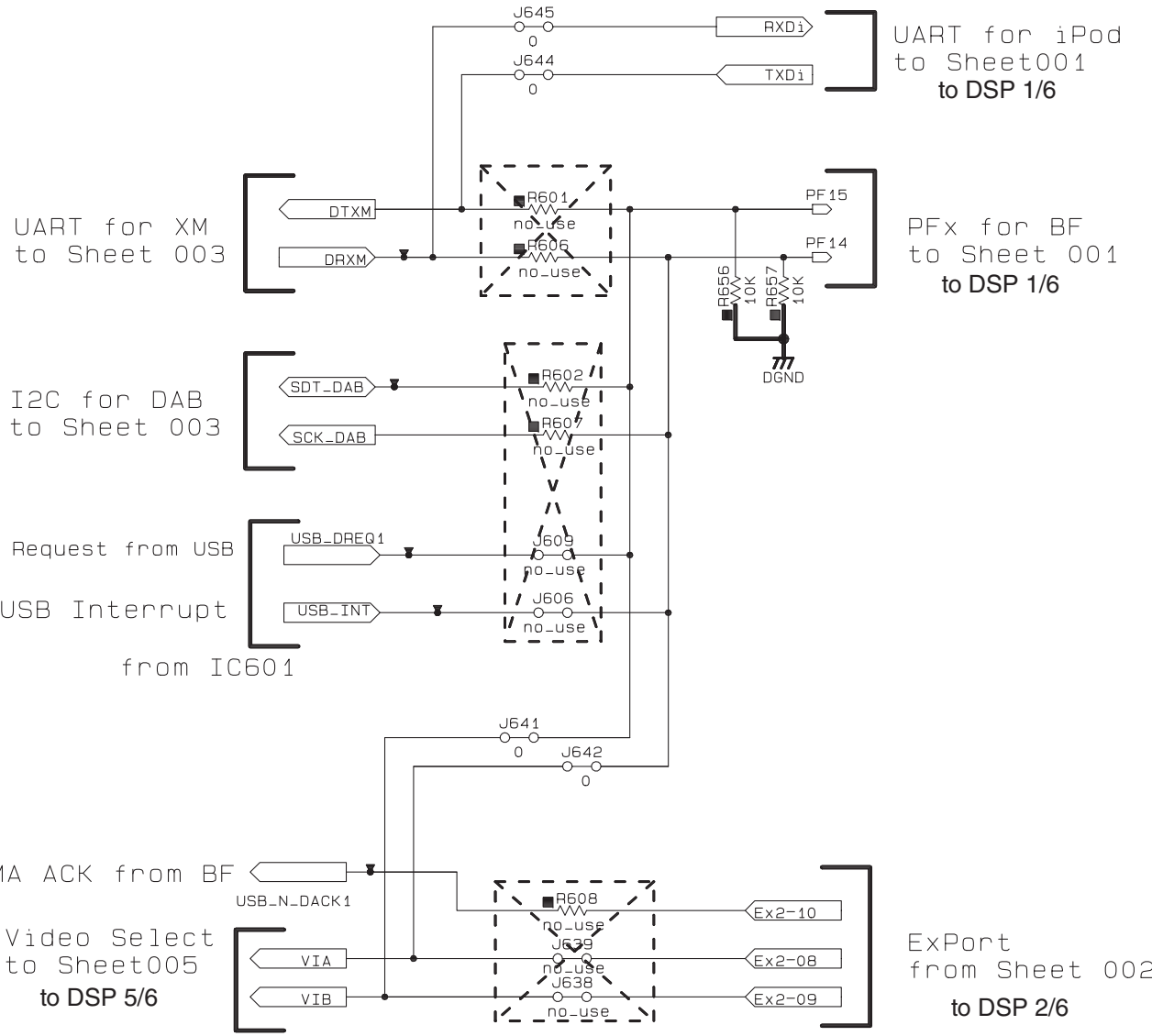
RESISTOR		CAPACITOR	
REMARKS	PARTS NAME	REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)	NO MARK	ELECTROLYTIC CAPACITOR
NO MARK	CARBON FILM RESISTOR (P=10)	NO MARK	TANTALUM CAPACITOR
NO MARK	METAL OXIDE FILM RESISTOR	NO MARK	CERAMIC CAPACITOR
NO MARK	METAL FILM RESISTOR	NO MARK	CERAMIC TUBULAR CAPACITOR
NO MARK	METAL PLATE RESISTOR	NO MARK	POLYESTER FILM CAPACITOR
NO MARK	FIRE PROOF CARBON FILM RESISTOR	NO MARK	POLYSTYRENE FILM CAPACITOR
NO MARK	CEMENT MOLDED RESISTOR	NO MARK	MICA CAPACITOR
NO MARK	SEMI VARIABLE RESISTOR	NO MARK	POLYPROPYLENE FILM CAPACITOR
NO MARK	CHIP RESISTOR	NO MARK	SEMICONDUCTIVE CERAMIC CAPACITOR
NO MARK		NO MARK	POLYPHENYLENE SULFIDE FILM CAPACITOR

NOTICE (model)
(J)..... JAPAN
(U)..... U.S. A
(C)..... CANADA
(R)..... GENERAL
(T)..... CHINA
(K)..... KOREA
(A)..... AUSTRALIA
(B)..... BRITISH
(G)..... EUROPE
(L)..... SINGAPORE
(E)..... SOUTH EUROPE
(V)..... TAIWAN
(F)..... RUSSIAN

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DSP 6/6

Destination Circuit



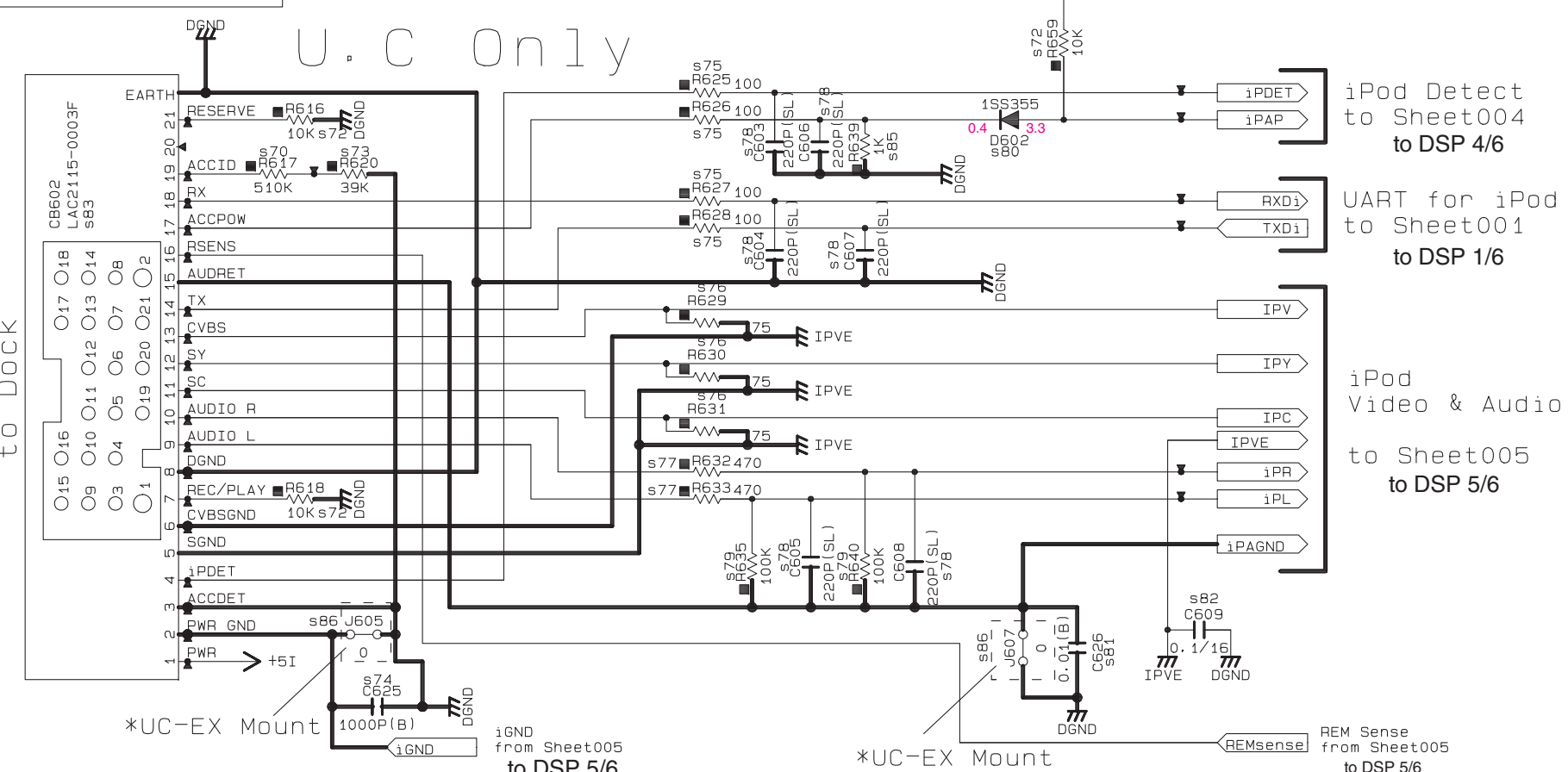
iPod

(U, C models)

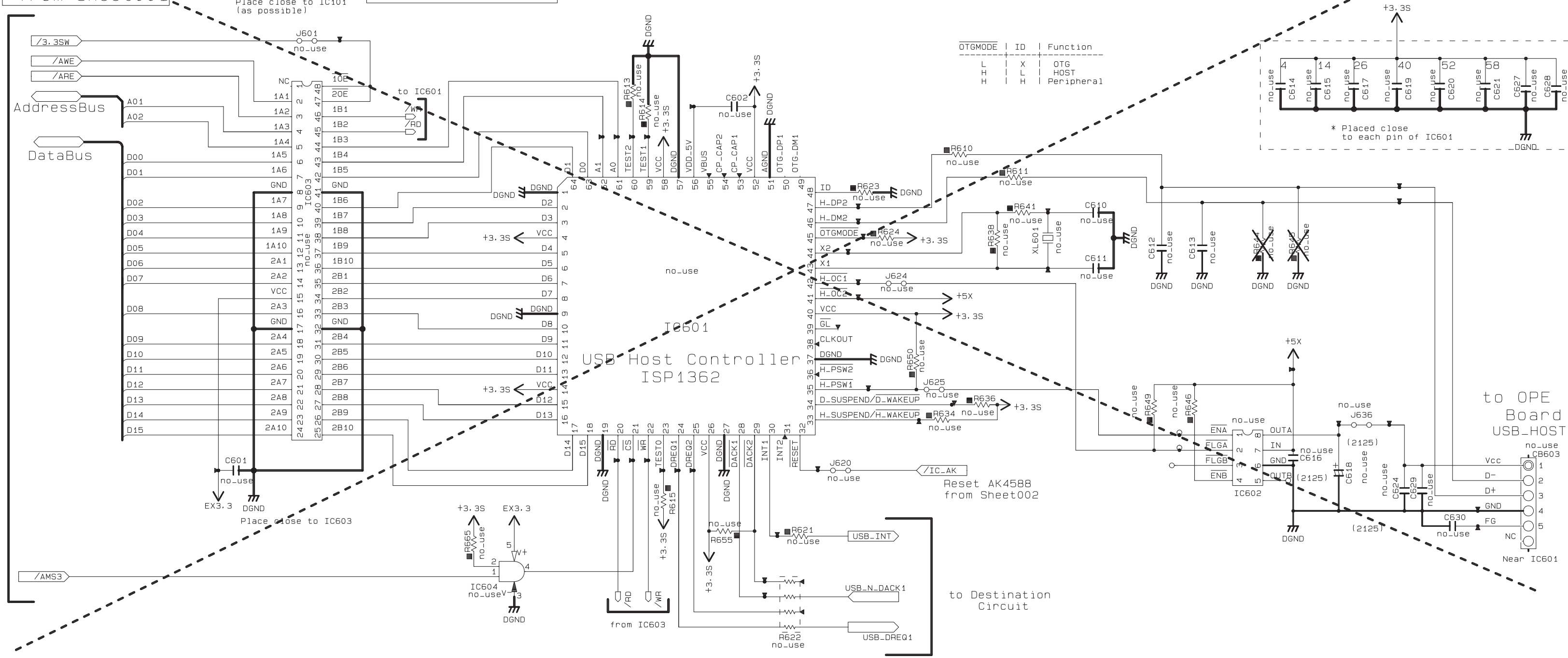
18pin:Rx for uCOM
14pin:Tx for uCOM

U.C Only

No replacement part available.



USB



sXX	LOC	UC	RL	T	KA	BGEF	sXX	LOC	UC	RL	T	KA	BGEF
s65	R652 R653 R651	X	X	X	X	RD35433 33	s77	R632 R633	RD35547 470	X	X	X	X
s66	R603	X	X	X	X	RD35710 10K	s78	C606 C607 C608 C605 C604 C603	US06222 220P(SL)	X	X	X	X
s67	J611	X	X	X	X	RD35000 0	s79	R640 R635	RD35510 100K	X	X	X	X
s70	R617	RF45851 510K	X	X	X	X	s80	D602	VT33290 1SS385	X	X	X	X
s72	R616 R618 R619	RD35710 10K	X	X	X	X	s81	C626	US06410 0.01(B)	X	X	X	X
s73	R620	RF45739 39K	X	X	X	X	s82	C609	US13510 0.1/16	X	X	X	X
s74	C625	US06310 1000P(B)	X	X	X	X	s83	CB602	LM45380 LAC2115-0003F	X	X	X	X
s75	R627 R625 R628 R626	RD35510 100	X	X	X	X	s85	R639	RD35610 1K	X	X	X	X
s76	R629 R631 R630	RD35475 75	X	X	X	X	s86	J605 J607	X	RD35000 0	RD35000 0	RD35000 0	RD35000 0

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=6)
□	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

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
⊙	POLYPHENYLENE SULFIDE FILM CAPACITOR

NOTICE (model1)

(J)..... JAPAN
(U)..... U.S.A
(C)..... CANADA
(R)..... GENERAL
(T)..... CHINA
(K)..... KOREA
(A)..... AUSTRALIA
(B)..... BRITISH
(G)..... EUROPE
(L)..... SINGAPORE
(E)..... SOUTH EUROPE
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(F)..... RUSSIAN

POWER

from Sheet005 to DSP 5/6

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OPERATION 1/2

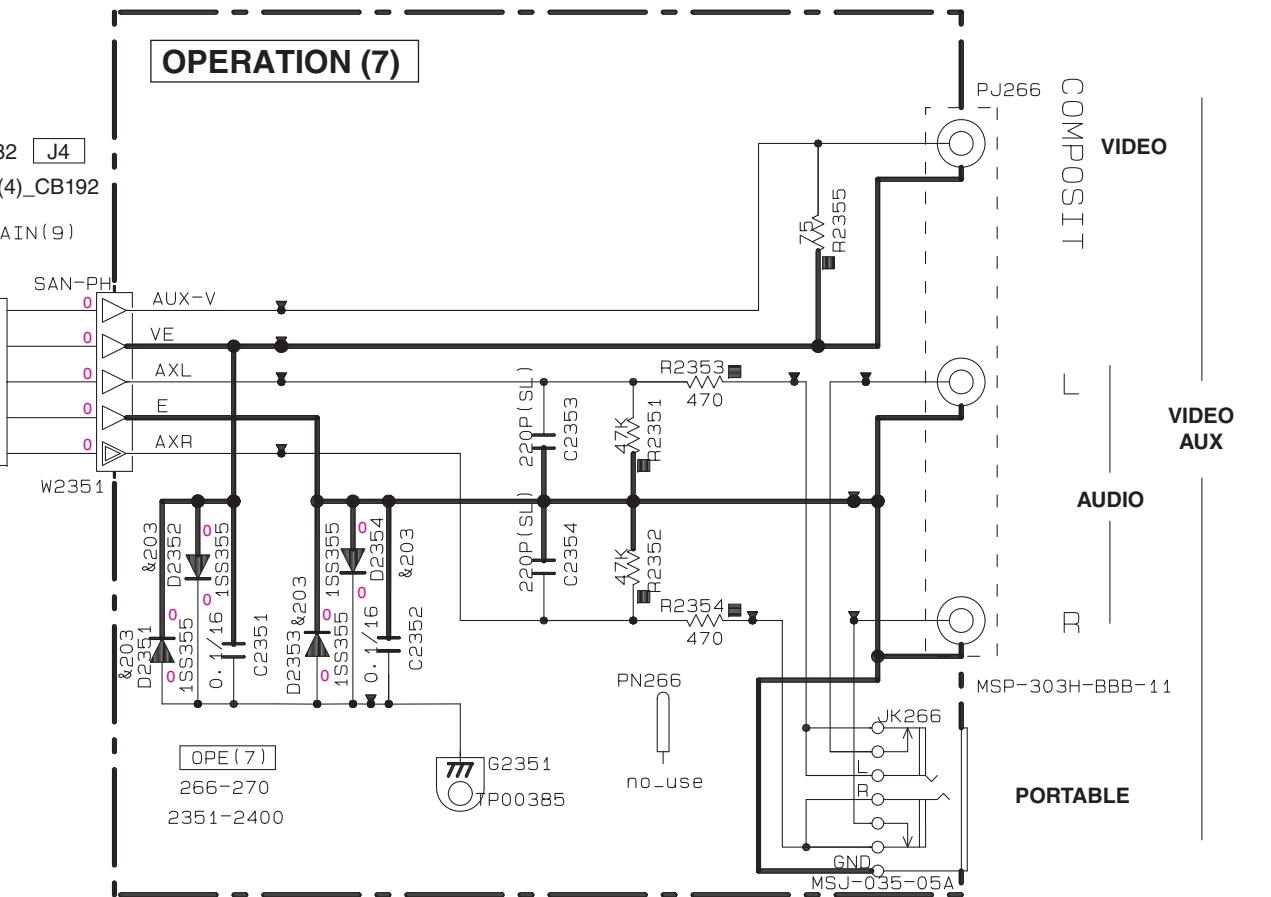
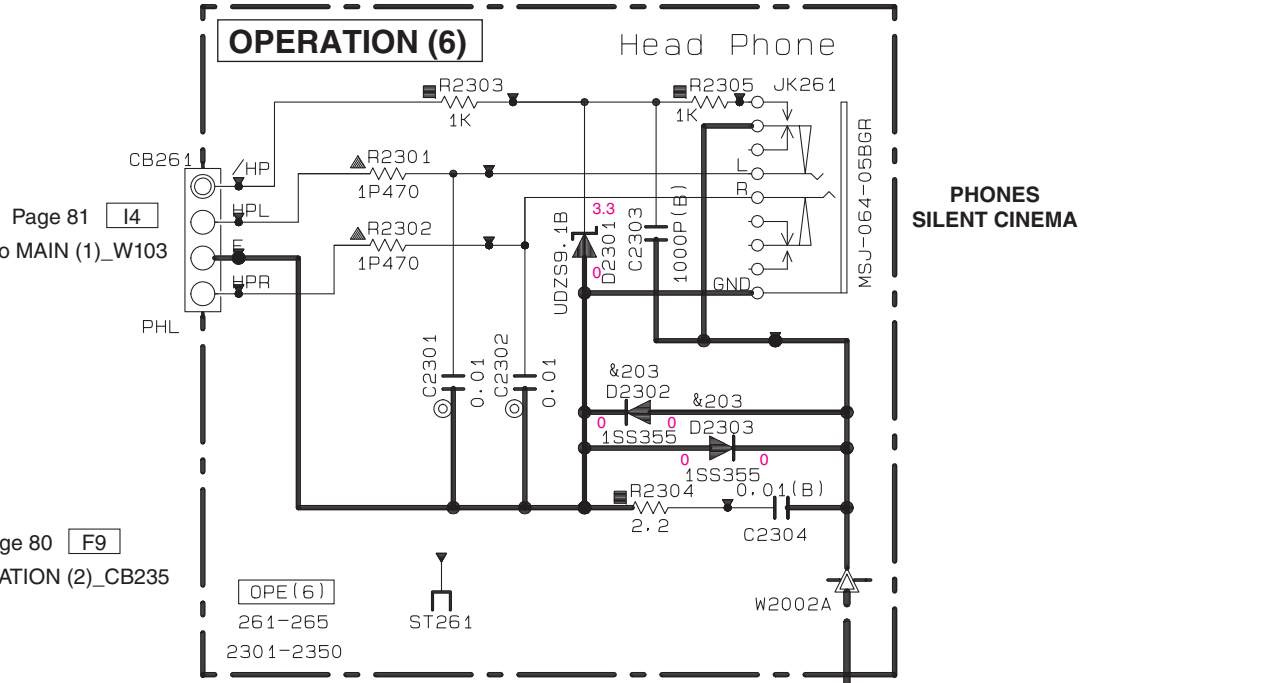
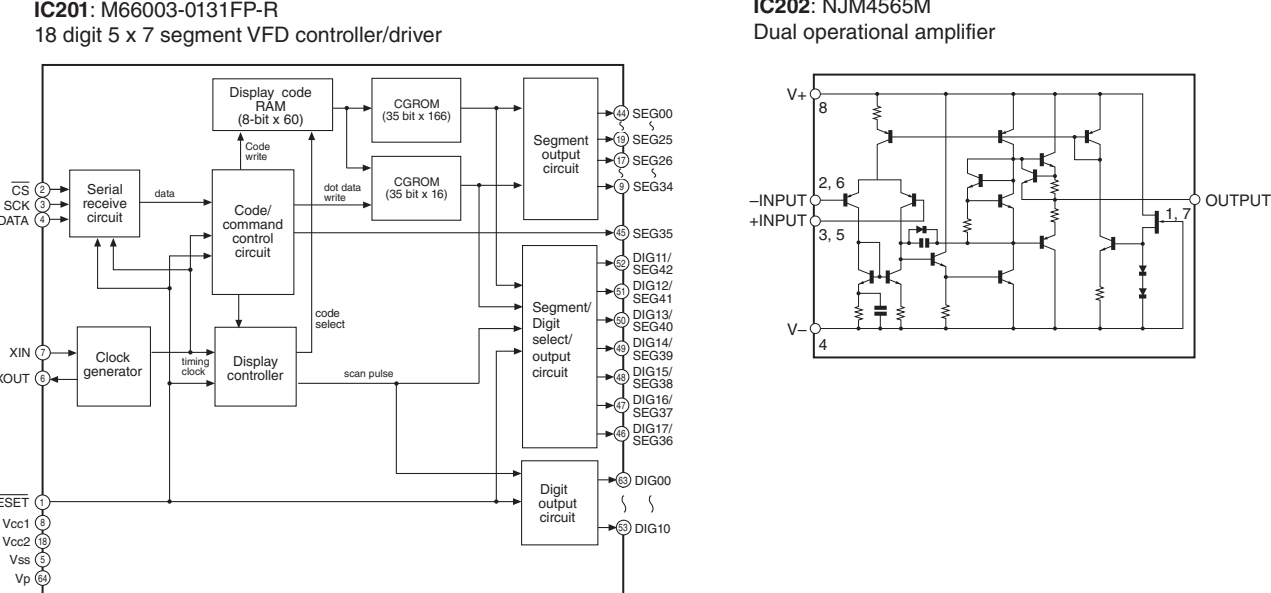
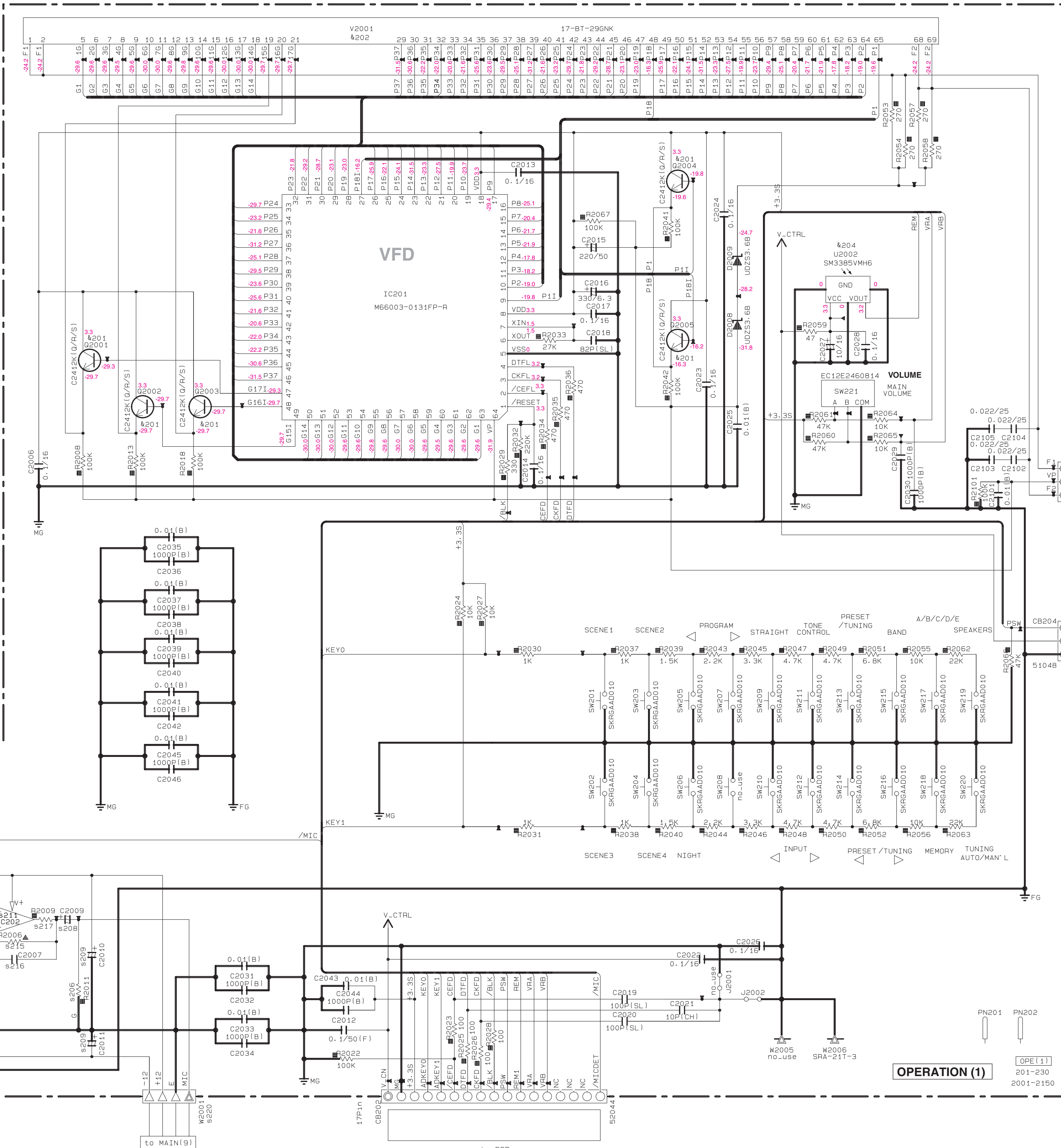
REMARKS	PARTS	NAME
NO MARK	CARBON FILM RESISTOR (P=5)	
⊠	CARBON FILM RESISTOR (P=10)	
△	METAL OXIDE FILM RESISTOR	
▴	METAL FILM RESISTOR	
⊞	METAL PLATE RESISTOR	
▮	FIRE PROOF CARBON FILM RESISTOR	
□	CEMENT MOLDED RESISTOR	
▨	SEMI VARIABLE RESISTOR	
■	CHIP RESISTOR	

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	
⊖	POLYPHENYLENE SULFIDE FILM CAPACITOR	

Interchangeable Parts at Manufacture-Stage

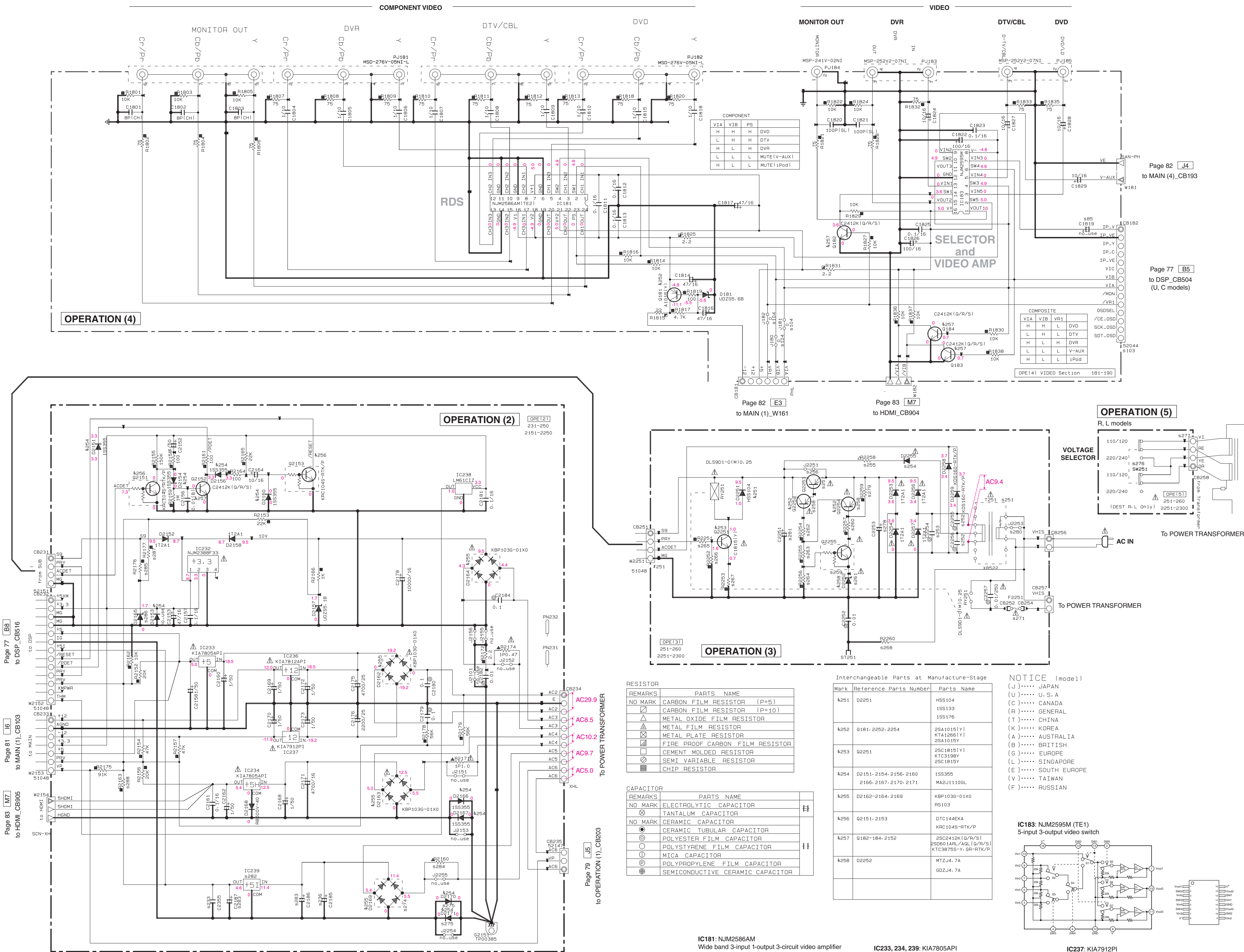
Mark	Reference Parts Number	Parts Name
Ⓚ201	Ⓚ2001-2005	2SC2412K(Q/R/S) 2SD0601ARL/AQL(Q/R/S) KTC3875S-Y-GR-RTK/P
Ⓚ202	V2001	17-BT-29GNK HNA-17WM04T
Ⓚ203	Ⓚ2004-2006-2302-2303 2351-2354	1SS355 MA2J1110GL
Ⓚ204	U2002	SM3385VMH6 RPM7238-H9

NOTICE (model)
(J)..... JAPAN
(U)..... U.S.A.
(C)..... CANADA
(B)..... GENERAL
(T)..... GHANA
(K)..... KOREA
(A)..... AUSTRALIA
(B)..... BRITISH
(G)..... EUROPE
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(F)..... RUSSIAN



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OPERATION 2/2



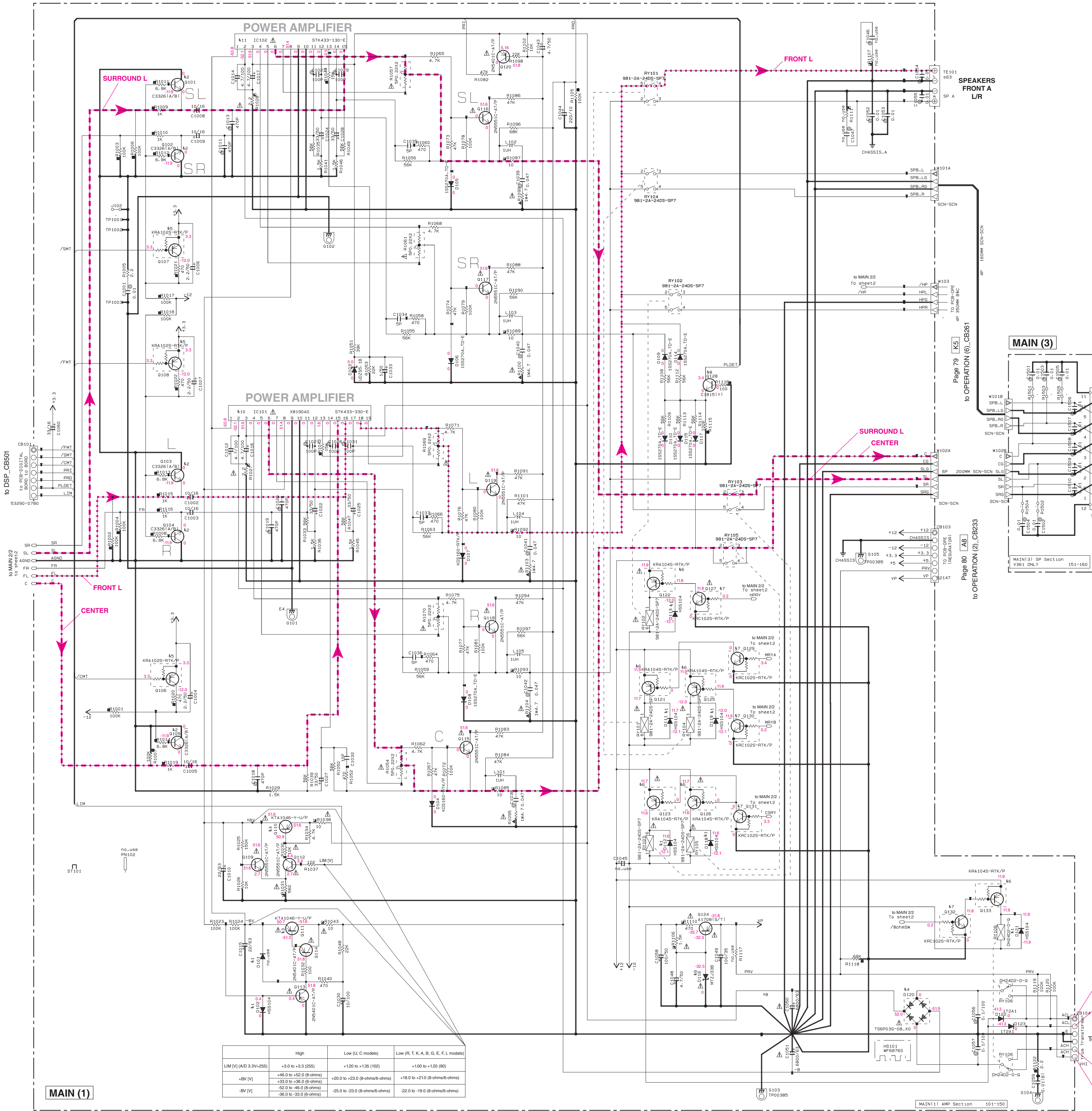
Destination Part List						
sxx	LOC	UC	RL	T	KABGEF	
s85	C1819	UR83710 10/16	X	X	X	
s103	CB182	VF98220 52044	X	X	X	
s104	J181 J180 J182	X	RD35000 0	RD35000 0	RD36000	
s201	JK201	X	WR12620 MSJ-1203B	X	WR12620 MSJ-1203B	
s202	C2002 C2110 C2111	X	U006210 1000P(B)	X	U006310 1000P(B)	
s203	R2010 R2001	X	RD39510 1K		RD39510 1K	
s204	R2007 R2014	X	RD35647 4.7K		RD35647 4.7K	
s205	D2006 D2004	X	VT33290 153395	X	VT33290 153395	
s206	R2011 R2005 R2003	X	RD39810 100K		RD39810 100K	
s207	C2001	X	U06410 0.01(B)		U06410 0.01(B)	
s208	C2003 C2009	X	UM39710 10/16		UM39710 10/16	
s209	C2008 C2011 C2010	X	UM39722 22/16	X	UM39722 22/16	
s210	R2002	X	RD36522 220		RD36522 220	
s211	1C202	X	X7378A0 NM4555M	X	X7378A0 NM4555M	
s212	C2004	X	U06210 100P(SL)		U06210 100P(SL)	
s213	R2004	X	RF35647 470		RF35647 470	
s214	C2005	X	UM38747 47/6.3	X	UM38747 47/6.3	
s215	R2006	X	RF35712 12K	X	RF35712 12K	

Destination Part List						
# 8XX	LOC	UC	RL	T	KABGEF	
#216	C2007	X	US06133 33P(CH)	X	US06133 33P(CH)	
#217	R2009	X	RD35682 8.2K	X	RD35682 8.2K	
#220	W2001	X	MF40410	X	MF40410	
#233	C2355	U513510 0.1/16	X	X	X	
#236	C2189	U973947 4700/16	X	X	X	
#251	T251	X852140 X8521	X852240 X8522	X852340 X8523	X852340 X8523	
#252	C2255 C2256	X	WJ60500 0.01	X	X	
#253	C2254	WJ60500 0.01	X	WJ60500 0.01	WJ60500 0.01	
#254	D2255	X	V999780 1241	X	X	
#255	R2258	X	VCT78700 2P47	X	X	
#256	J2521	VN50000	X	VN50000	VN50000	
#257	Q2263	X	V9B7260 A17081(S/T)	X	X	
#258	Q2252 Q2254	X	T410151 A10151(Y)	X	X	
#259	Q2255	X	WCS2920 KRC102M-A1/P	X	X	
#260	R2257	X	RD35747 47K	X	X	
#261	Q2252	X	V643700 MTJ4J. 7A	X	X	
#262	R2254	X	RD35610 1K	X	X	
#263	R2255	X	RD35722 22K	X	X	
#264	R2256	X	RD35647 4.7K	X	X	

Destination Part List						
sxx	LOC	UC	RL	T	KABGEF	
s265	R251	RD35647 4.7K	RD35610 1K	RD35647 4.7K	RD35647 4.7K	
s266	R252	RD35810 100K	RD35547 470	RD35810 100K	RD35810 100K	
s267	R253	RD35433 33	RD35368 6-B	RD35447 47	RD35447 47	
s268	R260	V673000 1/2P, 2H	X	X	X	
s271	F251	WB2120 B, 0.0A, 120V	AM93310 T3, 15A, 250V	V07170 T3, 15A, 250V	V07170 T3, 15A, 250V	
s274	D2159	WA65310 KBP1035-01X0	X	X	X	
s275	D2171 D2170	VT33290 1S355	X	X	X	
s276	SW251	X	VZ07550 SL14-22AMSF	X	X	
s277	CB258	X	V937790 B4P75-VH	X	X	
s278	C253	X	U89710 10V100	X	X	
s279	R259	X	RD35610 100K	X	X	
s280	J253	VN50000	X	VN50000	VN50000	
s281	C251	UR74922 250V/25	UR75922 250V/25	UR74922 250V/25	UR74922 250V/25	
s282	IC239	X4928A0 K1A7B05AP1	X	X	X	
s283	C2187 C2186	UR86610 1/50	X	X	X	
s284	R2160	W.68240 IP1-0	X	X	X	
s285	R2176	X	RD35610 1K	RD35610 1K	RD35610 1K	
s286	D2165	X	VU17190 U0255-1B	VU17190 U0255-1B	VU17190 U0255-1B	
s287	R2177	X	RD35722 22K	RD35722 22K	RD35722 22K	
s288	R2163	RD36720 20K	X	X	X	
s289	D2002	X	VU17190 U0255-1B	X	VU17190 U0255-1B	

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- ★ Schematic diagram is subject to change without notice.

MAIN 1/2



Interchangeable Parts at Manufacture-Stage

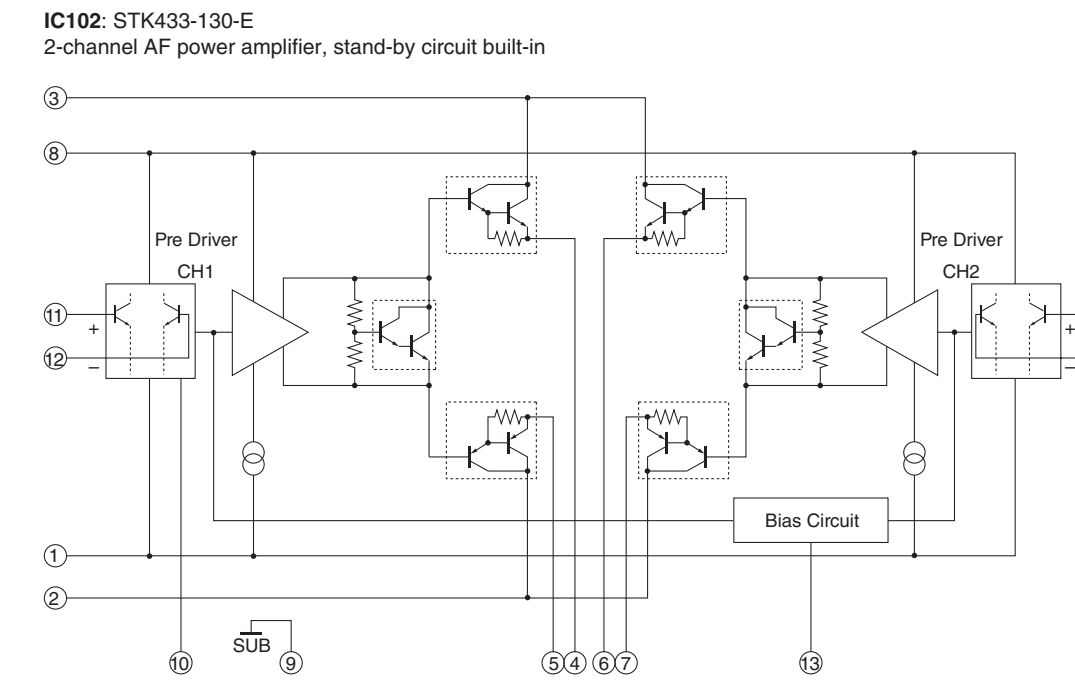
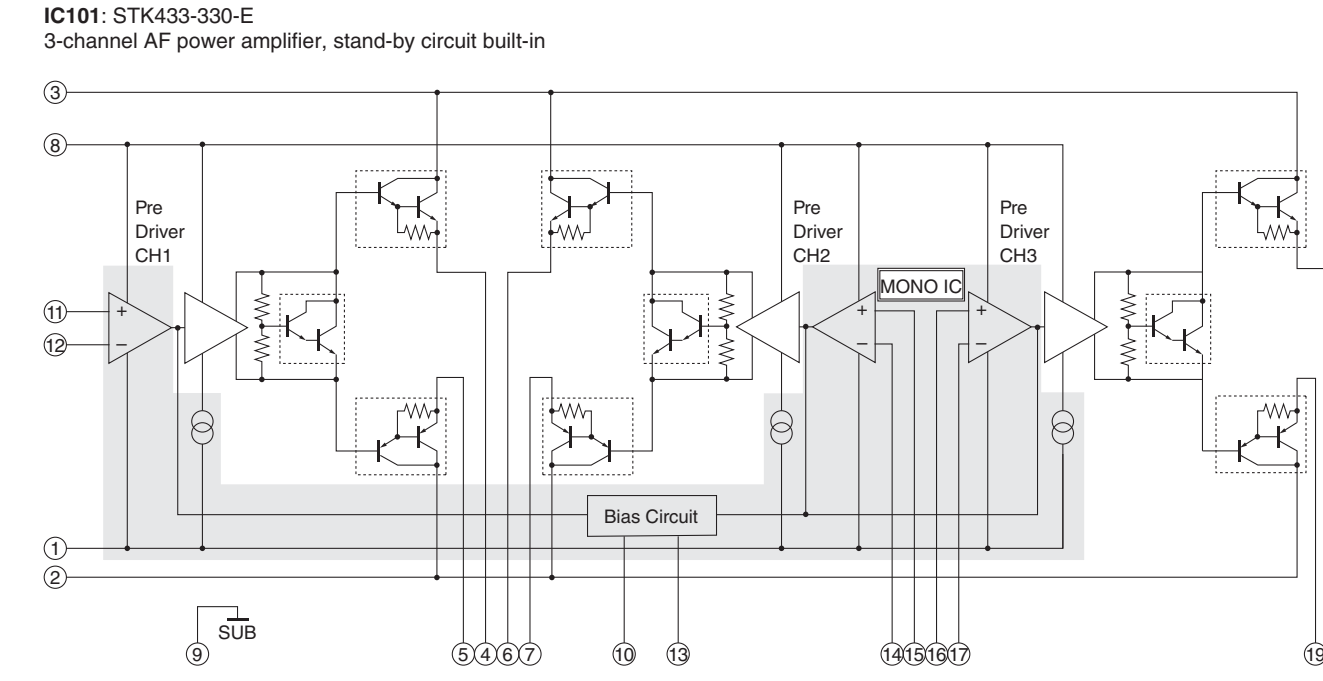
Mark	Reference Parts Number	Parts Name
K1	D102-111-113 118-119-121	HSB104 1SS133 1SS176
K2	G101-105	2SC3326(A/B) 2SC3326(B) 2SC3326(C) 2SD1938(F15/T 2SD2704K
K3	G110-111	2SB1274(R/S) 2SB1274(L/P) KTA1045-Y/U/P
K4	D120	1T6P033-OB-XO H5603M-B-C-J80
K5	G106-108	KRA1025-RTK/P DTA114EKA
K6	G121-123-125-126-133	KRA1045-RTK/P DTA144EKA
K7	G127-129-132	KRC1025-RTK/P DTA114EKA
K8	G128	2SC1815(Y) KTC319B Y-AT
K9	D116	MTZJ338 50ZJ338
K10	IC101	STK433-330-E STK433-330Y-E
K11	IC102	STK433-130-E STK433-130Y-E

NOTICE (model)

REMARKS	PARTS NAME
(J)..... JAPAN	
(U)..... U.S.A	
(C)..... CANADA	
(R)..... GENERAL	
(T)..... CHINA	
(K)..... KOREA	
(A)..... AUSTRALIA	
(B)..... BRITISH	
(G)..... EUROPE	
(L)..... SINGAPORE	
(E)..... SOUTH EUROPE	
(V)..... TAIWAN	
(F)..... RUSSIAN	

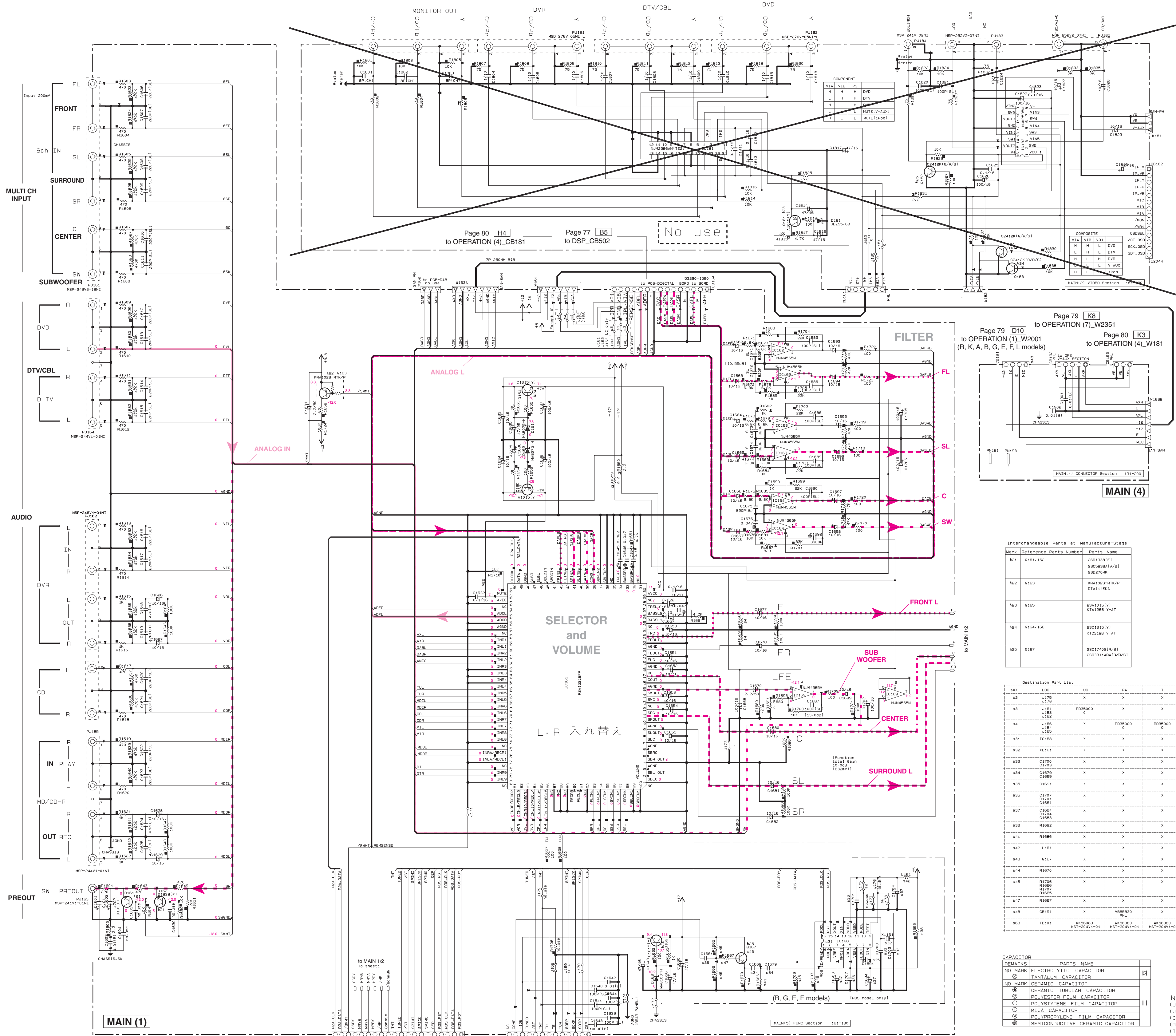
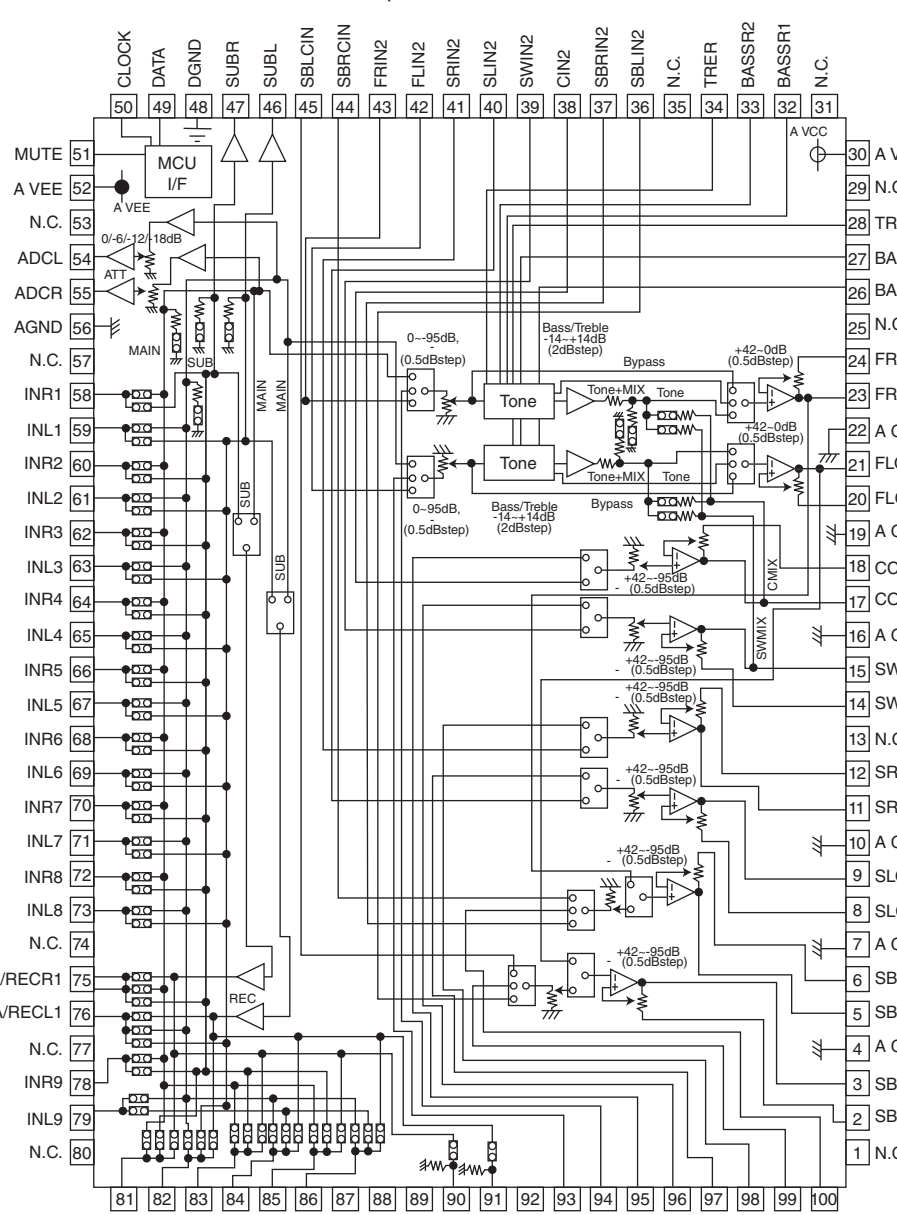
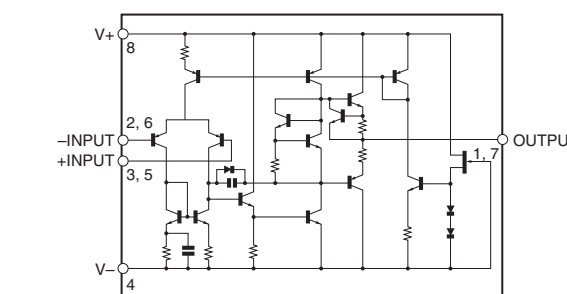
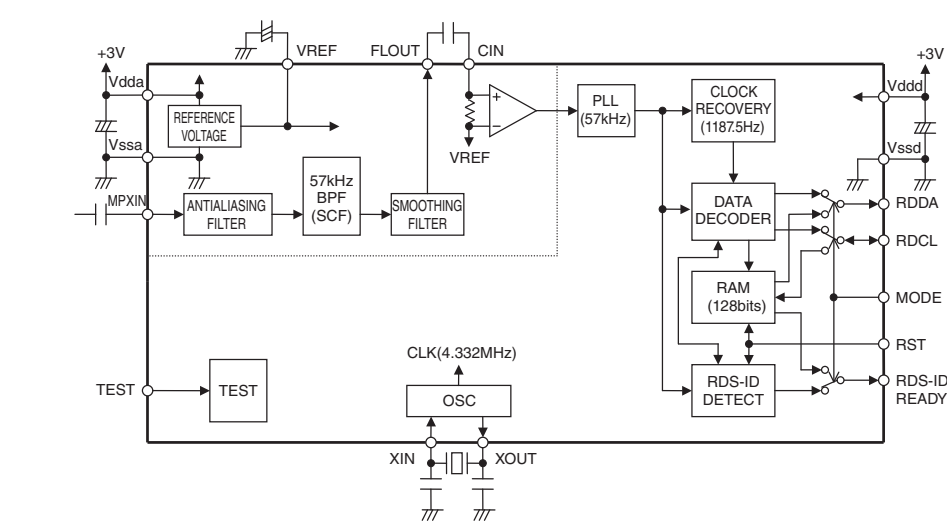
CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
●	CERAMIC TUBULAR CAPACITOR
○	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
①	MICA CAPACITOR
②	POLYPROPYLENE FILM CAPACITOR
③	SEMICONDUCTIVE CERAMIC CAPACITOR
④	POLYPHENYLENE SULFIDE FILM CAPACITOR



★ All voltages are measured with a 10MΩ/V DC electronic voltmeter.
★ 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.

MAIN 2/2

IC161: R2A15218FP
8-channel electronic volume with 11 input selector and tone controlIC162-164, 169: NJM4565M
Dual operational amplifierIC168: LC72725KM
RDS signal demodulation IC

Qty	Reference Parts Number	Parts Name
1	IC161	R2A15218FP
1	IC162-164, 169	NJM4565M
1	IC168	LC72725KM

Qty	Reference Parts Number	Parts Name
1	IC161	R2A15218FP
1	IC162-164, 169	NJM4565M
1	IC168	LC72725KM

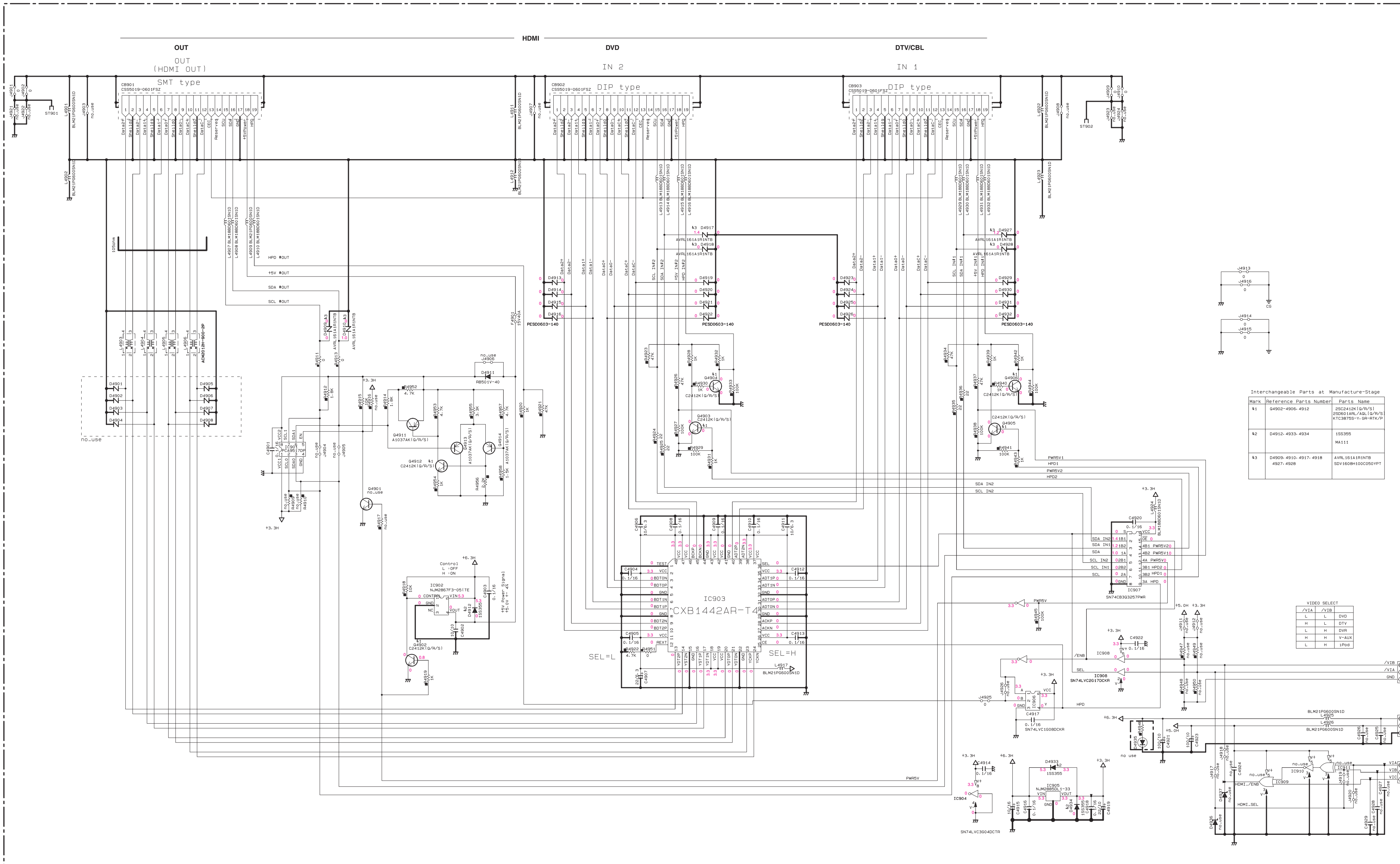
REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
NO MARK	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
NO MARK	CERAMIC TUBULAR CAPACITOR
NO MARK	POLYESTER FILM CAPACITOR
NO MARK	POLYETHYLENE FILM CAPACITOR
NO MARK	MICA CAPACITOR
NO MARK	POLYPROPYLENE FILM CAPACITOR
NO MARK	SEMICONDUCTIVE CERAMIC CAPACITOR

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

NOTICE (model1)
(U)..... JAPAN
(U)..... U.S.A
(C)..... CANADA
(R)..... GENERAL
(T)..... CHINA
(K)..... KOREA
(A)..... AUSTRALIA
(B)..... BRITISH
(G)..... EUROPE
(L)..... SINGAPORE
(E)..... SOUTH EUROPE
(V)..... TAIWAN
(F)..... RUSSIAN

★ All voltages are measured with a 10MΩ/V DC electronic voltmeter.
★ 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.

HDMI



Mark	Reference Parts Number	Parts Name
A1	D4902-4906, 4912	2SC2418K (Q/R/S) 2SD5014R/L (Q/L/Q/R/S) KTC3875C-Y (S-H/TX/P)
A2	D4912-4933, 4934	1SS395 NA111
A3	D4909-4910, 4917-4918 4927, 4928	AVR16141R1NTH SDV1608H100C05VPT

VIDEO SELECT			
/V1A	/V1B	DVD	
L	L	L	DVD
H	L	L	DTV
L	H	H	DVR
H	H	H	V-AUX
L	H	L	IPDD

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to OPERATION (4)_W182Page 80 AB
to OPERATION (2)_W154

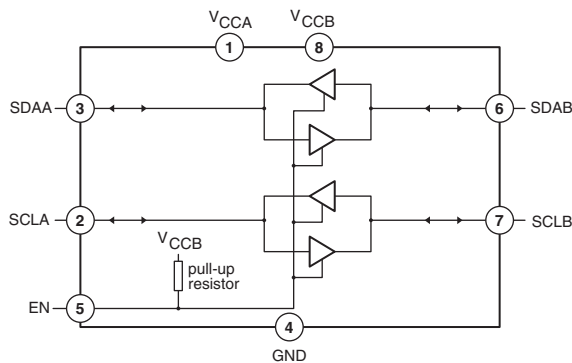
REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
⊠	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊞	METAL PLATE RESISTOR
⊞	FIRE PROOF CARBON FILM RESISTOR
⊞	CEMENT MOLDED RESISTOR
⊞	SEMI VARIABLE RESISTOR
⊞	CHIP RESISTOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊞	TANTALUM CAPACITOR
⊞	CERAMIC TUBULAR CAPACITOR
⊞	POLYESTER FILM CAPACITOR
⊞	POLYSTYRENE FILM CAPACITOR
⊞	MICA CAPACITOR
⊞	POLYPROPYLENE FILM CAPACITOR
⊞	SEMICONDUCTIVE CERAMIC CAPACITOR
⊞	POLYPHENYLENE SULFIDE FILM CAPACITOR

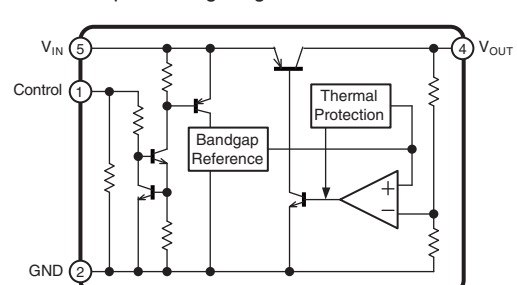
NOTICE (model)

(J)..... JAPAN
(U)..... U.S.A
(C)..... CANADA
(R)..... GENERAL
(T)..... CHINA
(K)..... KOREA
(A)..... AUSTRALIA
(L)..... BRITISH
(G)..... EUROPE
(E)..... SINGAPORE
(S)..... SOUTH EUROPE
(V)..... TAIWAN
(F)..... RUSSIAN

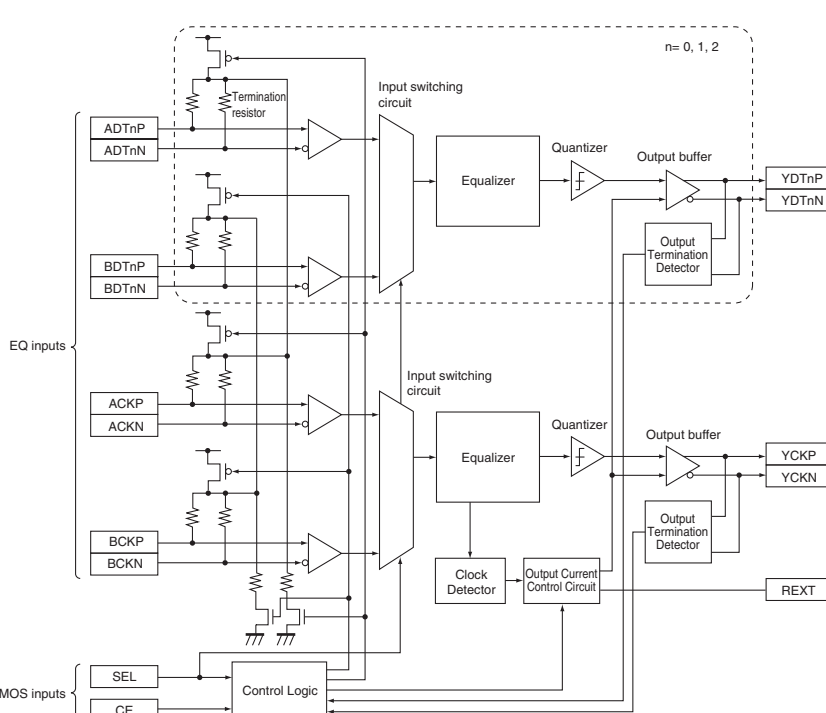
IC901: PCA9517DP
Level translating I²C-bus repeater



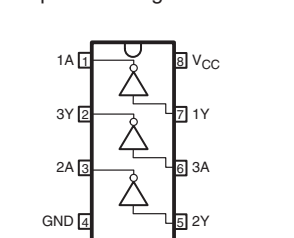
IC902: NJM2867F3-05
Low dropout voltage regulator



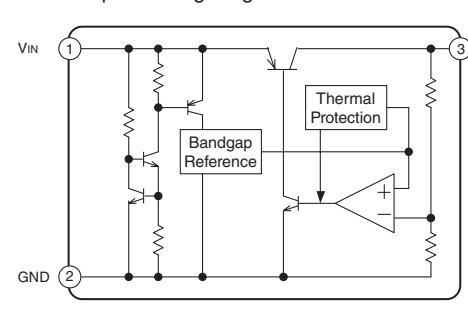
IC903: CXB1442AR-T4
Cable equalizer with 2-system switching function



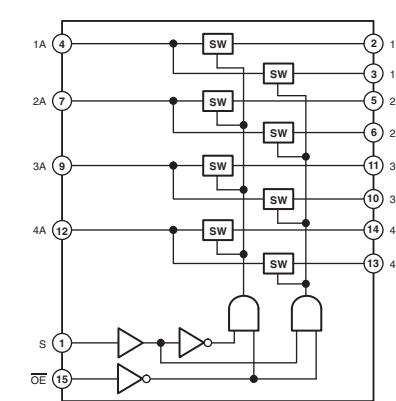
IC904: SN74LVC04DCTR
Triple inverter gate



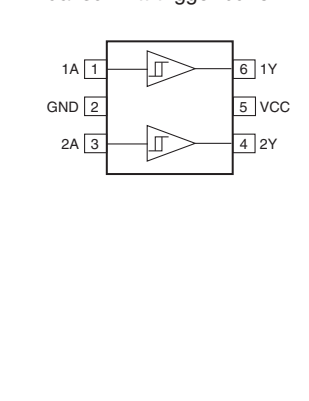
IC905: NJM2885DL1-33
Low dropout voltage regulator



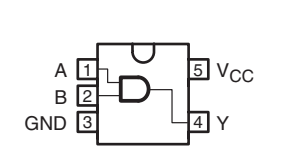
IC907: SN74CB3Q3257PWR
Low voltage high-bandwidth bus switch



IC908: SN74LVC2G17DCKR
Dual schmitt-trigger buffer



IC906: SN74LVC1G08DCKR
Single 2-input positive-AND gate



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★ Schematic diagram is subject to change without notice.

■ REPLACEMENT PARTS LIST

• ELECTRICAL COMPONENT PARTS

WARNING

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

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

C.A.EL.CHP	: CHIP ALUMI.ELECTROLYTIC CAP	L.EMIT	: LIGHT EMITTING MODULE
C.CE	: CERAMIC CAP	LED.DSPLY	: LED DISPLAY
C.CE.ARRAY	: CERAMIC CAP ARRAY	LED.INFRD	: LED,INFRARED
C.CE.CHP	: CHIP CERAMIC CAP	MODUL.RF	: MODULATOR,RF
C.CE.ML	: MULTILAYER CERAMIC CAP	PHOT.CPL	: PHOTO COUPLER
C.CE.M.CHP	: CHIP MULTILAYER CERAMIC CAP	PHOT.INTR	: PHOTO INTERRUPTER
C.CE.SAFTY	: RECOGNIZED CERAMIC CAP	PHOT.RFLCT	: PHOTO REFLECTOR
C.CE.TUBLR	: CERAMIC TUBULAR CAP	PIN.TEST	: PIN,TEST POINT
C.CE.SMI	: SEMI CONDUCTIVE CERAMIC CAP	PLST.RIVET	: PLASTIC RIVET
C.EL	: ELECTROLYTIC CAP	R.ARRAY	: RESISTOR ARRAY
C.MICA	: MICA CAP	R.CAR.	: CARBON RESISTOR
C.ML.FLM	: MULTILAYER FILM CAP	R.CAR.CHP	: CHIP RESISTOR
C.MP	: METALLIZED PAPER CAP	R.CAR.FP	: FLAME PROOF CARBON RESISTOR
C.MYLAR	: MYLAR FILM CAP	R.FUS	: FUSABLE RESISTOR
C.MYLAR.ML	: MULTILAYER MYLAR FILM CAP	R.MTL.CHP	: CHIP METAL FILM RESISTOR
C.PAPER	: PAPER CAPACITOR	R.MTL.FLM	: METAL FILM RESISTOR
C.PLS	: POLYSTYRENE FILM CAP	R.MTL.OXD	: METAL OXIDE FILM RESISTOR
C.POL	: POLYESTER FILM CAP	R.MTL.PLAT	: METAL PLATE RESISTOR
C.POLY	: POLYETHYLENE FILM CAP	RSNR.CE	: CERAMIC RESONATOR
C.PP	: POLYPROPYLENE FILM CAP	RSNR.CRYS	: CRYSTAL RESONATOR
C.TNTL	: TANTALUM CAP	R.TW.CEM	: TWIN CEMENT FIXED RESISTOR
C.TNTL.CHP	: CHIP TANTALUM CAP	R.CEMENT	: CEMENT RESISTOR
C.TRIM	: TRIMMER CAP	SCR.BND.HD	: BIND HEAD B-TIGHT SCREW
CN	: CONNECTOR	SCR.BW.HD	: BW HEAD TAPPING SCREW
CN.BS.PIN	: CONNECTOR,BASE PIN	SCR.CUP	: CUP TIGHT SCREW
CN.CANNON	: CONNECTOR,CANNON	SCR.TERM	: SCREW TERMINAL
CN.DIN	: CONNECTOR,DIN	SCR.TR	: SCREW,TRANSISTOR
CN.FLAT	: CONNECTOR,FLAT CABLE	SUPRT.PCB	: SUPPORT,P.C.B.
CN.POST	: CONNECTOR,BASE POST	SURG.PRTCT	: SURGE PROTECTOR
COIL.MX.AM	: COIL,AM MIX	SW.TACT	: TACT SWITCH
COIL.AT.FM	: COIL,FM ANTENNA	SW.LEAF	: LEAF SWITCH
COIL.DT.FM	: COIL,FM DETECT	SW.LEVER	: LEVER SWITCH
COIL.MX.FM	: COIL,FM MIX	SW.MICRO	: MICRO SWITCH
COIL.OUTPT	: OUTPUT COIL	SW.PUSH	: PUSH SWITCH
DIOD.ARRAY	: DIODE ARRAY	SW.RT.ENC	: ROTARY ENCODER
DIODE.BRG	: DIODE BRIDGE	SW.RT.MTR	: ROTARY SWITCH WITH MOTOR
DIODE.CHP	: CHIP DIODE	SW.RT	: ROTARY SWITCH
DIODE.VAR	: VARACTOR DIODE	SW.SLIDE	: SLIDE SWITCH
DIOD.Z.CHP	: CHIP ZENER DIODE	TERM.SP	: SPEAKER TERMINAL
DIODE.ZENR	: ZENER DIODE	TERM.WRAP	: WRAPPING TERMINAL
DSCR.CE	: CERAMIC DISCRIMINATOR	THRMST.CHP	: CHIP THERMISTOR
FER.BEAD	: FERRITE BEADS	TR.CHP	: CHIP TRANSISTOR
FER.CORE	: FERRITE CORE	TR.DGT	: DIGITAL TRANSISTOR
FET.CHP	: CHIP FET	TR.DGT.CHP	: CHIP DIGITAL TRANSISTOR
FL.DSPLY	: FLUORESCENT DISPLAY	TRANS	: TRANSFORMER
FLTR.CE	: CERAMIC FILTER	TRANS.PULS	: PULSE TRANSFORMER
FLTR.COMB	: COMB FILTER MODULE	TRANS.PWR	: POWER TRANSFORMER ASS'Y
FLTR.LC.RF	: LC FILTER,EMI	TUNER.AM	: TUNER PACK,AM
GND.MTL	: GROUND PLATE	TUNER.FM	: TUNER PACK,FM
GND.TERM	: GROUND TERMINAL	TUNER.PK	: FRONT-ENDTUNER PACK
HOLDER.FUS	: FUSE HOLDER	VR	: ROTARY POTENTIOMETER
IC.PRTCT	: IC PROTECTOR	VR.MTR	: POTENTIOMETER WITH MOTOR
JUMPER.CN	: JUMPER CONNECTOR	VR.SW	: POTENTIOMETER WITH ROTARY SW
JUMPER.TST	: JUMPER,TEST POINT	VR.SLIDE	: SLIDE POTENTIOMETER
L.DTCT	: LIGHT DETECTING MODULE	VR.TRIM	: TRIMMER POTENTIOMETER

P.C.B. DSP

Ref No.	Part No.	Description	Markets
	WN242100	P. C. B.	DSP
	WN242200	P. C. B.	DSP
	WN242300	P. C. B.	DSP
	WN242400	P. C. B.	DSP
	WN242500	P. C. B.	DSP
CB408	VF982300	CN. BS. PIN	17P
CB501	VQ961000	CN. BS. PIN	7P
CB502	VQ961800	CN. BS. PIN	15P
CB504	VN394900	CN. BS. PIN	14P
CB512	VQ047500	CN. BS. PIN	20P
CB516	VK025700	CN. BS. PIN	13P
C101	UR838220	C. EL	220uF 16V
C102	WH771300	C. EL	100uF 10V
C103-104	US135100	C. CE. CHP	0. 1uF 16V
C105	US061270	C. CE. CHP	27pF 50V B
C106	WH771300	C. EL	100uF 10V
C107	US135100	C. CE. CHP	0. 1uF 16V
C108-129	US063100	C. CE. CHP	1000pF 50V B
C130	US135100	C. CE. CHP	0. 1uF 16V
C131	US061270	C. CE. CHP	27pF 50V B
C132	UR837100	C. EL	10uF 16V
C133	US063100	C. CE. CHP	1000pF 50V B
C135	UB446100	C. CE. CHP	1uF 16V
C136-147	US135100	C. CE. CHP	0. 1uF 16V
C148-154	UB446100	C. CE. CHP	1uF 16V
C201-206	US063100	C. CE. CHP	1000pF 50V B
C207-211	US135100	C. CE. CHP	0. 1uF 16V
C212	US063100	C. CE. CHP	1000pF 50V B
C215-218	UB446100	C. CE. CHP	1uF 16V
C301-304	US135100	C. CE. CHP	0. 1uF 16V
C305	UR837470	C. EL	47uF 16V
C306	US135100	C. CE. CHP	0. 1uF 16V
C307	US063100	C. CE. CHP	1000pF 50V B
C308	UR837100	C. EL	10uF 16V
C309-310	US061270	C. CE. CHP	27pF 50V B
C311	UR866220	C. EL	2. 2uF 50V
C312	US135100	C. CE. CHP	0. 1uF 16V
C313	US061220	C. CE. CHP	22pF 50V B
C314	UR847220	C. EL	22uF 25V
C315-317	US135100	C. CE. CHP	0. 1uF 16V
C321	US135100	C. CE. CHP	0. 1uF 16V
C349-350	UR837100	C. EL	10uF 16V
C351-352	US135100	C. CE. CHP	0. 1uF 16V
C354-358	US135100	C. CE. CHP	0. 1uF 16V
C401-402	US135100	C. CE. CHP	0. 1uF 16V
C404	UR837470	C. EL	47uF 16V
C405	US135100	C. CE. CHP	0. 1uF 16V
C406	UB446100	C. CE. CHP	1uF 16V
C407-408	US062100	C. CE. CHP	100pF 50V B
C409	US135100	C. CE. CHP	0. 1uF 16V
C410-411	US062100	C. CE. CHP	100pF 50V B
C413-416	US063100	C. CE. CHP	1000pF 50V B
C417	US062470	C. CE. CHP	470pF 50V B
C418-428	US135100	C. CE. CHP	0. 1uF 16V
C429-435	US062100	C. CE. CHP	100pF 50V B
C436-439	US135100	C. CE. CHP	0. 1uF 16V
C501	US062100	C. CE. CHP	100pF 50V B

* New Parts

P.C.B. DSP

Ref No.	Part No.	Description	Markets
C502	UR838220	C. EL	220uF 16V
C503-504	US062100	C. CE. CHP	100pF 50V B
C513-515	US062100	C. CE. CHP	100pF 50V B
C516	US035100	C. CE. CHP	0. 1uF 16V B
C517-518	US062100	C. CE. CHP	100pF 50V B
C519	US135100	C. CE. CHP	0. 1uF 16V
C520	US035100	C. CE. CHP	0. 1uF 16V B
C521	US063100	C. CE. CHP	1000pF 50V B
C522-523	US135100	C. CE. CHP	0. 1uF 16V
C524-525	US063100	C. CE. CHP	1000pF 50V B
C527-528	US064100	C. CE. CHP	0. 01uF 50V B
C529	US062100	C. CE. CHP	100pF 50V B
C530	US064100	C. CE. CHP	0. 01uF 50V B
C531-534	US062100	C. CE. CHP	100pF 50V B
C535	US064100	C. CE. CHP	0. 01uF 50V B
C536-549	US062100	C. CE. CHP	100pF 50V B
C550	US064100	C. CE. CHP	0. 01uF 50V B
C603-608	US062220	C. CE. CHP	220pF 50V B
C609	US135100	C. CE. CHP	0. 1uF 16V
C623	US135100	C. CE. CHP	0. 1uF 16V
C625	US063100	C. CE. CHP	1000pF 50V B
C626	US064100	C. CE. CHP	0. 01uF 50V B
D101	VS597600	DIODE. CHP	RB160L-40 TE25
D401	VU171400	DIODE. ZENR	UDZS3. 3BTE-17 3. 3V
D402	VU171400	DIODE. ZENR	UDZS3. 3BTE-17 3. 3V
D403-404	VU171400	DIODE. ZENR	UDZS3. 3BTE-17 3. 3V
D405	VT332900	DIODE	1SS355
D407	VT332900	DIODE	1SS355
D408	VU171400	DIODE. ZENR	UDZS3. 3BTE-17 3. 3V
D409	VU171400	DIODE. ZENR	UDZS3. 3BTE-17 3. 3V
D409	VU171400	DIODE. ZENR	UDZS3. 3BTE-17 3. 3V
D602	VT332900	DIODE	1SS355
G101	WB438000	TERM. GND	M4 SD00433-21
IC101	X7534A00	IC. CPU	ADSP-BF531 CPU
IC102	X8653A00	IC	BR25L320F-W EEPROM
* IC201	YA430A00	IC. MEMORY	F49L160BA-70TG (written)
IC202	X9626A00	IC. MEMORY	K4S641632K-UC60000
IC203	X4201A00	IC	SN74AHC02PWR
IC204-206	X4285A00	IC	SN74LV573APWR
IC301	X7919A00	IC	AK4588VQ
IC305	X3936A00	IC	SN74LVU04APWR
IC401	X6905A00	IC	ADC084S021C1MM
IC402-403	X5875A00	IC	SN74LV4051APWR
IC404	X2709A00	IC	SN74AHCT245PWR
IC501	X3824A00	IC	SN74AHCT08PWR
IC505	X4463A00	IC	SN74LV08APWR
PJ301	V8795700	JACK. PIN	1P
Q101	WE736300	FET	RTQ040P02
Q501	WE736300	FET	RTQ040P02
U301-302	WH169900	CN. PHOTO. R	1P GP1FV51RK0F
XL101	VZ540700	RSNR. CRYST	25MHz SMD-49
XL301	WJ625200	RSNR. CRYST	24. 576MHz

* New Parts

P.C.B. OPERATION

Ref No.	Part No.	Description	Markets
* * * *	WQ890400	P. C. B.	UC
	WQ890500	P. C. B.	RL
	WQ890600	P. C. B.	T
	WQ890700	P. C. B.	KABGEF
CB181	VB858500	CN. BS. PIN	UC
CB182	VF982200	CN. BS. PIN	
CB202	VF982300	CN. BS. PIN	
CB231	VK026300	CN. BS. PIN	
CB234	LB919110	CN. BS. PIN	RL
CB235	VK024700	CN. BS. PIN	
CB252	WN077700	CLIP. FUSE	
CB254	WN077700	CLIP. FUSE	
CB256-257	VG879900	CN. BS. PIN	RL
CB258	V9377900	CN. BS. PIN	
CB261	VB858300	CN. BS. PIN	
C1801-1803	US060800	C. CE. CHP	
C1804-1810	WE773800	C. CE. M. CHP	UC
C1811-1813	US135100	C. CE. CHP	
C1814	UR837470	C. EL	
C1815	WE773800	C. CE. M. CHP	
C1816-1817	UR837470	C. EL	UC
C1818	WE773800	C. CE. M. CHP	
C1819	UR837100	C. EL	
C1820-1821	US062100	C. CE. CHP	
C1822	UR838100	C. EL	RKABGEFL
C1823	US135100	C. CE. CHP	
C1824	UR837100	C. EL	
C1825	US135100	C. CE. CHP	
C1826	UR838100	C. EL	RKABGEFL
C1827-1829	UR837100	C. EL	
C2001	US064100	C. CE. CHP	
C2002	US063100	C. CE. CHP	
C2003	UM397100	C. EL	RKABGEFL
C2004	US062100	C. CE. CHP	
C2005	UM387470	C. EL	
C2006	US135100	C. CE. CHP	
C2007	US061330	C. CE. CHP	RKABGEFL
C2008	UM397220	C. EL	
C2009	UM397100	C. EL	
C2010-2011	UM397220	C. EL	
C2012	US065100	C. CE. CHP	RKABGEFL
C2013-2014	US135100	C. CE. CHP	
C2015	UR268220	C. EL	
C2016	UM388330	C. EL	
C2017	US135100	C. CE. CHP	RKABGEFL
C2018	US061820	C. CE. CHP	
C2019-2020	US062100	C. CE. CHP	
C2021	US061100	C. CE. CHP	
C2022-2024	US135100	C. CE. CHP	UC
C2025	US064100	C. CE. CHP	
C2026	US135100	C. CE. CHP	
C2027	UM397100	C. EL	
C2028	US135100	C. CE. CHP	RKABGEFL
C2029-2030	US063100	C. CE. CHP	
C2031	US064100	C. CE. CHP	
C2032	US063100	C. CE. CHP	
C2033	US064100	C. CE. CHP	RKABGEFL

* New Parts

P.C.B. OPERATION

Ref No.	Part No.	Description	Markets
C2034	US063100	C. CE. CHP	RKABGEFL
C2035	US064100	C. CE. CHP	
C2036	US063100	C. CE. CHP	
C2037	US064100	C. CE. CHP	
C2038	US063100	C. CE. CHP	RKABGEFL
C2039	US064100	C. CE. CHP	
C2040	US063100	C. CE. CHP	
C2041	US064100	C. CE. CHP	
C2042	US063100	C. CE. CHP	RKABGEFL
C2043	US064100	C. CE. CHP	
C2044	US063100	C. CE. CHP	
C2045	US064100	C. CE. CHP	
C2046	US063100	C. CE. CHP	RKABGEFL
C2101	US064100	C. CE. CHP	
C2102-2105	US044220	C. CE. CHP	
C2110-2111	US063100	C. CE. CHP	
C2152	UR866100	C. EL	UC
C2153	UR837470	C. EL	
C2156	US064100	C. CE. CHP	
C2157	US135100	C. CE. CHP	
C2158	UR866100	C. EL	UC
C2160	UR866100	C. EL	
C2161	US135100	C. CE. CHP	
C2162	UR866100	C. EL	
C2164	UR837100	C. EL	UC
C2168-2170	UR866100	C. EL	
C2171	UR739470	C. EL	
C2172-2173	UR866100	C. EL	
C2175	UR749470	C. EL	UC
C2176	UR749220	C. EL	
C2178	UR73A100	C. EL	
C2179-2180	VE326000	C. MYLAR	
C2181	US135100	C. CE. CHP	UC
C2182	WJ605000	C. MYLAR	
C2184	VE326000	C. MYLAR	
C2185	UR739470	C. EL	
C2186-2187	UR866100	C. EL	UC
C2251	UR749220	C. EL	
C2251	UR749220	C. EL	
C2251	UR759220	C. EL	
C2252	WJ605000	C. MYLAR	RKABGEFL
C2253	UR897100	C. EL	
C2254	WJ605000	C. MYLAR	
C2255-2256	WJ605000	C. MYLAR	
△ * C2257	WQ939400	C. CE. SAFTY	RKABGEFL
C2301-2302	WJ605000	C. MYLAR	
C2303	US063100	C. CE. CHP	
C2304	US064100	C. CE. CHP	
C2351-2352	US135100	C. CE. CHP	UC
C2353-2354	US062220	C. CE. CHP	
C2355	US135100	C. CE. CHP	
D181	VU172000	D1ODE. ZENR	
D2002	VU171900	D1ODE. ZENR	RKABGEFL
D2004	VT332900	D1ODE	
D2006	VT332900	D1ODE	
D2008-2009	VU171500	D1ODE. ZENR	
D2151	VT332900	D1ODE	RKABGEFL

* New Parts

P.C.B. OPERATION

Ref No.	Part No.	Description	Markets
D2152	VS997800	DIODE 1T2	
D2154	VT332900	DIODE 1SS355	
D2156	VT332900	DIODE 1SS355	
D2157	VU171900	DIODE. ZENR UDZ5. 1B 5. 1V	
D2158	VS997800	DIODE 1T2	
D2160	VT332900	DIODE 1SS355	
△ D2162-2164	WA653100	DIODE. BRG KBP103G 1A 200V	
D2165	VU171900	DIODE. ZENR UDZ5. 1B 5. 1V	RKABGEFL
D2166-2167	VT332900	DIODE 1SS355	
D2168	V2376600	DIODE. SHOT RB500V-40	
D2169	WA653100	DIODE. BRG KBP103G 1A 200V	UC
D2170-2171	VT332900	DIODE 1SS355	UC
D2251	VD631600	DIODE 1SS133, 176	
△ D2252	VG437000	DIODE. ZENR MTZJ4. 7A 4. 7V	RL
△ D2253-2254	VS997800	DIODE 1T2	
△ D2255	VS997800	DIODE 1T2	RL
△ D2256-2257	VS997800	DIODE 1T2	
D2258-2259	WC398800	DIODE KDS160-RTK	
D2301	VU172500	DIODE. ZENR UDZS9. 1B	
D2302-2303	VT332900	DIODE 1SS355	
D2351-2354	VT332900	DIODE 1SS355	
△ F2251	WB221200	FUSE T6A 125V	UC
△ F2251	WM933100	FUSE T5A 250V	RL
△ F2251	VV071700	FUSE 3. 15A 250V	TKABGEF
IC181	X7362A00	IC NJM2586AM (TE2)	
IC183	X9374A00	IC NJM2595M	
IC201	X6386A00	IC M66003-0131FP	
IC202	X7378A00	IC NJM4565M (TE1)	RKABGEFL
△ IC232	X6248A00	IC NJM2388F33	
△ IC233-234	X4928A00	IC KIA7805API 5V	
△ IC236	X4153A00	IC KIA7812API	
△ IC237	X4154A00	IC KIA7912PI	
* IC238	X0515B00	IC LM61CIZ THERMAL	
IC239	X4928A00	IC KIA7805API 5V	UC
JK201	WC814400	JACK. MNI JY-3554-01-130	RKABGEFL
JK261	V9408200	JACK. PHONE MSJ-064-05B GR	
JK266	WJ117400	JACK. MNI OPTIMIZER MIC	
PJ181-182	WG505100	JACK. PIN 6P	
PJ183	V7190000	JACK. PIN 2P	
PJ184	V7189800	JACK. PIN 1P	
PJ185	V7190000	JACK. PIN 2P	
PJ266	WJ117500	JACK. PIN 3P	
PN201-202	V9637500	PIN L=70 #18	
PN231-232	V9637500	PIN L=70 #18	
PN272	V9637500	PIN L=70 #18	
Q181	iA101510	TR 2SA1015 Y	
Q182-184	VV556400	TR 2SC2412K Q, R, S	
Q2001-2005	VV556400	TR 2SC2412K Q, R, S	
Q2151	WC435100	TR. DGT KRC104S-RTK	
Q2152	VV556400	TR 2SC2412K Q, R, S	
Q2153	WC435100	TR. DGT KRC104S-RTK	
△ Q2251	iC181510	TR 2SC1815 Y	
△ Q2252	iA101510	TR 2SA1015 Y	RL
△ Q2253	VP872600	TR 2SA1708 S, T	RL
△ Q2254	iA101510	TR 2SA1015 Y	RL
△ Q2255	WC529200	TR. DGT KRC102M-AT	RL
R1815	HV754220	R. CAR. FP 22Ω 1/4W	

* New Parts

P.C.B. OPERATION and P.C.B. MAIN

Ref No.	Part No.	Description	Markets
R1825	HV753220	R. CAR. FP 2. 2Ω 1/4W	
R1831	HV753220	R. CAR. FP 2. 2Ω 1/4W	
R2160	WJ682400	R. MTL. FLM 1Ω 1W J	UC
△ R2171	WJ682400	R. MTL. FLM 1Ω 1W J	
△ R2174	WJ682000	R. MTL. FLM 0. 47Ω 1W J	
R2258	VC757900	R. MTL. OXD 47Ω 2W	RL
R2260	V6730000	R. CAR. 2. 2MΩ 1/2W	UC
R2301-2302	WJ685600	R. MTL. FLM 470Ω 1W J	
△ RY251	V9366900	RELAY DLS9D1-0 (M) 0. 25W	
* ST251	WR364700	SCR. TERM M3	
* ST261	WR364800	SCR. TERM D3. 5	
SW201-207	WD483100	SW. TACT SKRGAAD010	
SW209-220	WD483100	SW. TACT SKRGAAD010	
SW221	V9597100	SW. RT. ENC EC12E2460802	
△ SW251	VZ075500	SW. SLIDE SL14-22AM5F	RL
SW274	WD483100	SW. TACT SKRGAAD010	
△ T251	X8521A00	TRANS. PWR	UC
△ T251	X8522A00	TRANS. PWR	RL
△ T251	X8523A00	TRANS. PWR	TKABGEF
* U2002	WQ600700	L. DTCT SM3385VMH6	
V2001	WJ264400	FL. DSPLY 17-BT-29GNK	
	WA790900	SPACER 4. 6/10/32	
	WN241400	P. C. B. MAIN	UC
	WN241500	P. C. B. MAIN	RA
	WN241600	P. C. B. MAIN	T
	WN241700	P. C. B. MAIN	KL
	WN241800	P. C. B. MAIN	BGEF
CB101	VQ962800	CN. BS. PIN 7P	
CB103	VK025100	CN. BS. PIN 7P	
CB104	LB932060	CN. BS. PIN 6P	
CB161	VQ047500	CN. BS. PIN 20P	
CB163	VM923600	CN. BS. PIN 13P	
CB164	VQ963600	CN. BS. PIN 15P	
CB191	VB858300	CN. BS. PIN 4P	
CB192	VB858400	CN. BS. PIN 5P	
CB193	VB858200	CN. BS. PIN 3P	
C1001	WJ605000	C. MYLAR 0. 01uF 50V J	
C1002-1003	UR837100	C. EL 10uF 16V	
C1004	UR866220	C. EL 2. 2uF 50V	
C1005	UR837100	C. EL 10uF 16V	
C1006-1007	UR866220	C. EL 2. 2uF 50V	
C1008-1009	UR837100	C. EL 10uF 16V	
C1010	UR877220	C. EL 22uF 63V	
C1011	WJ603300	C. MYLAR 470pF 50V J	
C1012	UR896470	C. EL 4. 7uF 100V	
C1013	WJ603300	C. MYLAR 470pF 50V J	
C1014	UR896470	C. EL 4. 7uF 100V	
C1015	UR877220	C. EL 22uF 63V	
C1016-1017	UR896470	C. EL 4. 7uF 100V	
C1018-1020	WJ603300	C. MYLAR 470pF 50V J	
C1021	WJ602900	C. MYLAR 100pF 50V K	
C1022	UR867330	C. EL 33uF 50V	
C1023	WJ602900	C. MYLAR 100pF 50V K	
C1024-1025	UR867330	C. EL 33uF 50V	

* New Parts

P.C.B. MAIN

Ref No.	Part No.	Description	Markets
C1026	WJ602900	C. MYLAR 100pF 50V K	
C1027-1028	UR867330	C. EL 33uF 50V	
C1029	WJ602900	C. MYLAR 100pF 50V K	
C1030	UR897100	C. EL 10uF 100V	
C1031	WJ602900	C. MYLAR 100pF 50V K	
C1032	FG651100	C. CE 10pF 50V	
C1033	UR866100	C. EL 1uF 50V	
C1034-1037	FG650500	C. CE 5pF 50V	
C1038-1042	WJ605800	C. MYLAR 0.047uF 50V J	
C1043	UR866470	C. EL 4.7uF 50V	
C1044	UR828220	C. EL 220uF 10V	
C1048	UR866470	C. EL 4.7uF 50V	
C1049	UR858100	C. EL 100uF 35V	
△ C1050-1051	WE514200	C. EL 6800uF 63V	
C1052-1055	WJ605000	C. MYLAR 0.01uF 50V J	
C1056-1057	WJ611400	C. MYLAR 0.1uF 100V J	
C1058	UR868100	C. EL 100uF 50V	
C1059	US064100	C. CE. CHP 0.01uF 50V B	
C1060	UR837330	C. EL 33uF 16V	
C1501-1510	WJ605000	C. MYLAR 0.01uF 50V J	
C1601	WJ605000	C. MYLAR 0.01uF 50V J	
C1602	WJ603300	C. MYLAR 470pF 50V J	
C1603	US064100	C. CE. CHP 0.01uF 50V B	
C1606-1617	US062220	C. CE. CHP 220pF 50V B	
C1618-1619	US061470	C. CE. CHP 47pF 50V B	
C1620-1623	US062220	C. CE. CHP 220pF 50V B	
C1624-1625	US061470	C. CE. CHP 47pF 50V B	
C1626-1629	UR837100	C. EL 10uF 16V	
C1631	UR866220	C. EL 2.2uF 50V	
C1632	US135100	C. CE. CHP 0.1uF 16V	
C1633-1634	UR837100	C. EL 10uF 16V	
C1635-1636	UR847470	C. EL 47uF 25V	
C1637-1638	UR838100	C. EL 100uF 16V	
C1639-1641	US062100	C. CE. CHP 100pF 50V B	
C1642	US064100	C. CE. CHP 0.01uF 50V B	
C1643	US063100	C. CE. CHP 1000pF 50V B	
C1644	US062100	C. CE. CHP 100pF 50V B	
C1645	WJ605400	C. MYLAR 0.022uF 50V J	
C1646	WJ605800	C. MYLAR 0.047uF 50V J	
C1647	VE326200	C. MYLAR 0.15uF 50V	
C1648	UR837470	C. EL 47uF 16V	
C1649	WJ605400	C. MYLAR 0.022uF 50V J	
C1650-1655	UR837100	C. EL 10uF 16V	
C1656	UR837470	C. EL 47uF 16V	
C1657	VE326200	C. MYLAR 0.15uF 50V	
C1658	US135100	C. CE. CHP 0.1uF 16V	
C1659	WJ605800	C. MYLAR 0.047uF 50V J	
C1660	UR837470	C. EL 47uF 16V	
C1661	US135100	C. CE. CHP 0.1uF 16V	BGEF
C1662-1667	UR837100	C. EL 10uF 16V	
C1668	UR838100	C. EL 100uF 16V	
C1669	US062330	C. CE. CHP 330pF 50V B	BGEF
C1670	UR866220	C. EL 2.2uF 50V	
C1671-1674	US162820	C. CE. CHP 820pF 50V J	
C1675	US062820	C. CE. CHP 820pF 50V B	
C1676	WJ605800	C. MYLAR 0.047uF 50V J	
C1677-1678	UR837100	C. EL 10uF 16V	

* New Parts

P.C.B. MAIN

Ref No.	Part No.	Description	Markets
C1679	US062330	C. CE. CHP 330pF 50V B	BGEF
C1680-1682	UR837100	C. EL 10uF 16V	
C1683-1684	UR837470	C. EL 47uF 16V	BGEF
C1685-1690	US062100	C. CE. CHP 100pF 50V B	
C1691	US062560	C. CE. CHP 560pF 50V B	BGEF
C1692	WJ604400	C. MYLAR 3900pF 50V J	
C1693-1699	UR837100	C. EL 10uF 16V	
C1700	US061270	C. CE. CHP 27pF 50V B	BGEF
C1701	US135100	C. CE. CHP 0.1uF 16V	BGEF
C1702	UR838100	C. EL 100uF 16V	
C1703	US061270	C. CE. CHP 27pF 50V B	BGEF
C1704	UR837470	C. EL 47uF 16V	BGEF
C1705-1706	UR838100	C. EL 100uF 16V	
C1707	US135100	C. CE. CHP 0.1uF 16V	BGEF
C1901-1902	US064100	C. CE. CHP 0.01uF 50V B	
D102	VD631600	D1ODE 1SS133, 176	
D103	VU171900	D1ODE. ZENR UDZ5.1B 5.1V	
D104	WC398800	D1ODE KDS160-RTK	
D105-106	VN008700	D1ODE 1SS270A	
D107	WC398800	D1ODE KDS160-RTK	
D108-110	VN008700	D1ODE 1SS270A	
D111-113	VD631600	D1ODE 1SS133, 176	
D114-115	VN008700	D1ODE 1SS270A	
△ D116	VG443700	D1ODE. ZENR MTZJ33B 33V	
D117	VN008700	D1ODE 1SS270A	
D118-119	VD631600	D1ODE 1SS133, 176	
△ D120	WA653200	D1ODE. BRG TS6P03G 6A 200V	
D121	VD631600	D1ODE 1SS133, 176	
D122-123	VS997800	D1ODE 1T2	
D161-162	VU994300	D1ODE. ZENR MA8075-H 7.7V	
D163	VU995500	D1ODE. ZENR MA8100-H 10.3V	
△ IC101	X8190A00	IC STK433-330-E	
△ IC102	X7427A00	IC STK433-130-E	
IC161	X8155B00	IC R2A15218FP	
IC162-164	X7378A00	IC NJM4565M (TE1)	BGEF
IC168	X8235A00	IC LC72725KM	
IC169	X7378A00	IC NJM4565M (TE1)	
PJ161	V7190400	JACK. PIN 6P	
PJ162	V7046800	JACK. PIN 6P MSP-246V1-01NI	
PJ163	V7189700	JACK. PIN 1P	
PJ164-165	V7046700	JACK. PIN 4P MSP-244V1-01NI	
PN191	V9637500	PIN L=70 #18	
PN193	V9637500	PIN L=70 #18	
Q101-105	VD303700	TR 2SC3326 A, B	
Q106-108	WC434800	TR. DGT KRA102S-RTK/P	
△ Q109	WC398400	TR 2N5551C-AT	
△ Q110-111	WG538600	TR KTA1046-Y-U/P	
△ Q112	WC398400	TR 2N5551C-AT	
△ Q113-114	WC397700	TR 2N5401C-AT	
△ Q115-119	WC398400	TR 2N5551C-AT	
△ Q120	WC397700	TR 2N5401C-AT	
△ Q121-123	WC434900	TR. DGT KRA104S-RTK	
△ Q124	VP872600	TR 2SA1708 S, T	
△ Q125-126	WC434900	TR. DGT KRA104S-RTK	
△ Q127	WC435000	TR. DGT KRC102S-RTK	
Q128	iC181510	TR 2SC1815 Y	
Q129-132	WC435000	TR. DGT KRC102S-RTK	

* New Parts

P.C.B. MAIN and P.C.B. HDMI

P.C.B. HDMI

Ref No.	Part No.	Description	Markets
Q133	WC434900	TR. DGT	KRA104S-RTK
Q161-162	VZ725900	TR	2SD1938F S, T
Q163	WC434800	TR. DGT	KRA102S-RTK/P
Q164	iC181510	TR	2SC1815 Y
Q165	iA101510	TR	2SA1015 Y
Q166	iC181510	TR	2SC1815 Y
Q167	iC174020	TR	2SC1740S QRS
△ R1027-1028	HV753220	R. CAR. FP	2. 2Ω 1/4W
△ R1031	HV755560	R. CAR. FP	560Ω 1/4W
△ R1038	HV754100	R. CAR. FP	10Ω 1/4W
△ R1043	HV754100	R. CAR. FP	10Ω 1/4W
△ R1054	WB279900	R. CEMENT	RGC55C 0.22+0.22
△ R1057	WB279900	R. CEMENT	RGC55C 0.22+0.22
△ R1061	WB279900	R. CEMENT	RGC55C 0.22+0.22
△ R1069-1070	WB279900	R. CEMENT	RGC55C 0.22+0.22
R1085	HV754100	R. CAR. FP	10Ω 1/4W
R1087	HV754100	R. CAR. FP	10Ω 1/4W
R1089	HV754100	R. CAR. FP	10Ω 1/4W
R1092-1093	HV754100	R. CAR. FP	10Ω 1/4W
△ R1095	WB625100	R. MTL. FLM	4. 7Ω 1W J
△ R1099-1100	WB625100	R. MTL. FLM	4. 7Ω 1W J
△ R1103-1104	WB625100	R. MTL. FLM	4. 7Ω 1W J
△ R1106	HV756150	R. CAR. FP	1. 5KΩ 1/4W
△ R1110	HV755470	R. CAR. FP	470Ω 1/4W
R1659-1660	HV753220	R. CAR. FP	2. 2Ω 1/4W
△ RY101-105	WJ122400	RELAY	981-2A-24DS-SP7
RY106	WE648700	RELAY	DC DH24D2-O-Q
ST101	WA789600	SCR. TERM	M3
TE101	WK560800	TERM. SP	4P MST-204V1-01 NC
TE101	WK560900	TERM. SP	4P MST-204V1-01 WC
TE151	WJ551900	TERM. SP	MSP-120V2-11 (765A)
XL161	WJ588000	RSNR. CRYST	4. 332MHz
	WE774200	SCR. BND. HD	3x10 MFZN2W3
*	WN243201	P. C. B.	HDMI
CB901-903	WM462600	CN. HDMI	19P SE
CB904	VB389900	CN. BS. PIN	3P
CB905	LB919030	CN. BS. PIN	3P
C4901	US135100	C. CE. CHP	0. 1uF 16V
C4902	WD758300	C. CE. CHP	10uF 10V
C4903-4905	US135100	C. CE. CHP	0. 1uF 16V
C4906	V5333500	C. CE. CHP	10uF 6. 3V
C4907	UF017220	C. EL. CHP	22uF 6. 3V
C4908-4910	US135100	C. CE. CHP	0. 1uF 16V
C4911	V5333500	C. CE. CHP	10uF 6. 3V
C4912-4914	US135100	C. CE. CHP	0. 1uF 16V
C4915	UF037100	C. EL. CHP	10uF 16V
C4916-4918	US135100	C. CE. CHP	0. 1uF 16V
C4919	UF027220	C. EL. CHP	22uF 10V
C4920	US135100	C. CE. CHP	0. 1uF 16V
C4921	UF028100	C. EL. CHP	100uF 10V
C4922	US135100	C. CE. CHP	0. 1uF 16V
C4923	UF028100	C. EL. CHP	100uF 10V
D4909-4910	WE674800	DIODE	AVRL161A1R1NTB
D4911	VV220700	DIODE. SHOT	RB501V-40

* New Parts

Ref No.	Part No.	Description	Markets
D4912	VT332900	DIODE	1SS355
D4913-4916	WH641900	PESD	PESD0603-140
D4917-4918	WE674800	DIODE	AVRL161A1R1NTB
D4919-4926	WH641900	PESD	PESD0603-140
D4927-4928	WE674800	DIODE	AVRL161A1R1NTB
D4929-4932	WH641900	PESD	PESD0603-140
D4933-4934	VT332900	DIODE	1SS355
F4901	V2997600	SW. POLY	SMDC050-02
IC901	X8368A00	IC	PCA9517DP
IC902	X7741A00	IC	NJM2867F3-05 (TE1)
IC903	X8900A00	IC	CXB1442AR-T4
IC904	X7854A00	IC	SN74LVC3G04DCTR
IC905	X6869A00	IC	NJM2885DL1-33
IC906	X5896A00	IC	SN74LVC1G08DCKR
IC907	X7743A00	IC	SN74CB3Q3257PWR
IC908	X4454A00	IC	SN74LVC2G17DCKR
Q4902-4906	VV556400	TR	2SC2412K Q, R, S
Q4911	VV556400	TR	2SA1037K Q, R, S
Q4912	VV556400	TR	2SC2412K Q, R, S
Q4913-4914	VV556400	TR	2SA1037K Q, R, S
ST901-902	WA789600	SCR. TERM	M3

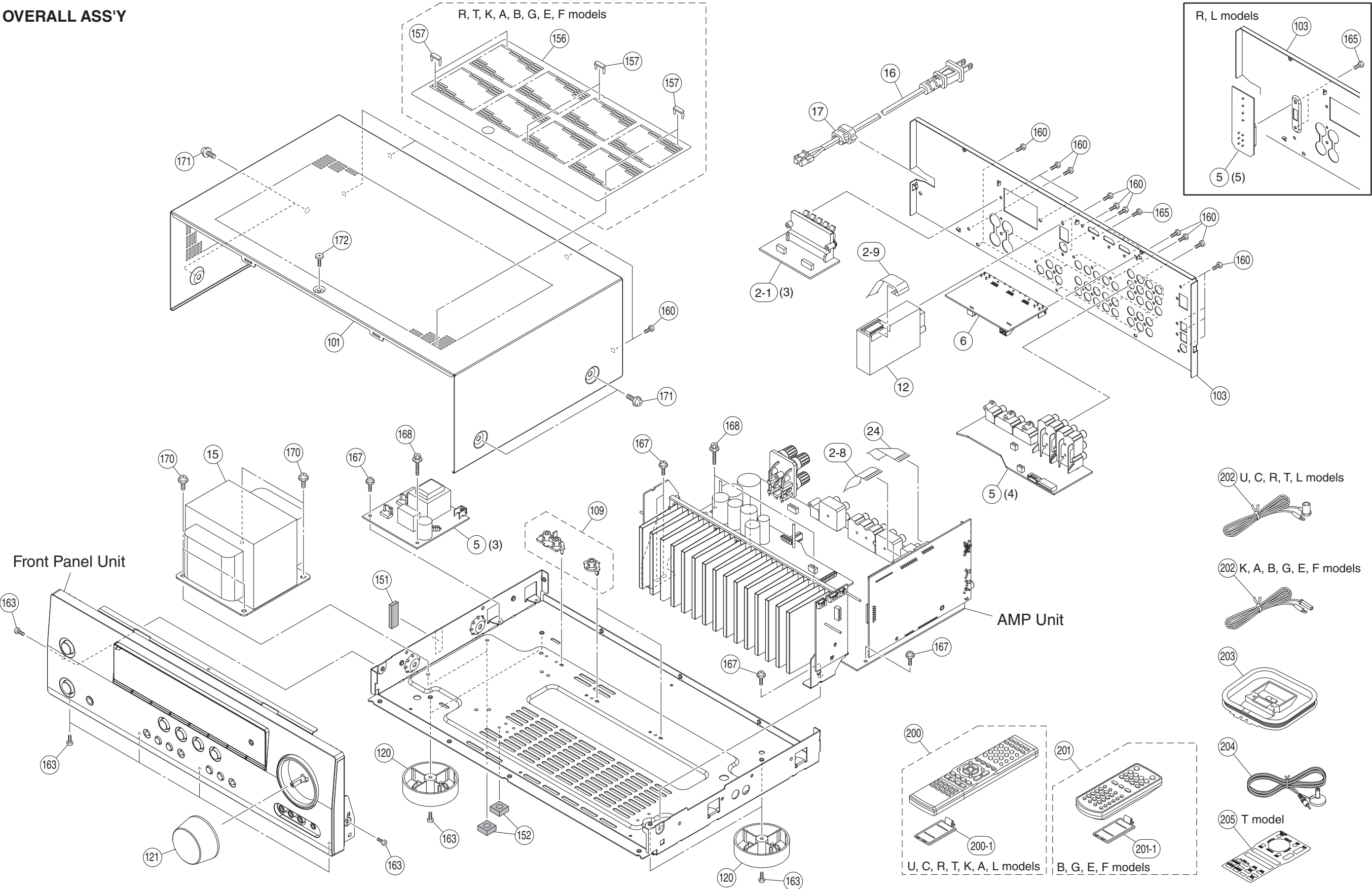
* New Parts

Carbon Resistors

Value	1/4W Type Part No.	1/6W Type Part No.	Value	1/4W Type Part No.	1/6W Type Part No.
1.0 Ω	HJ35 3100	HF85 3100	11 kΩ	HF45 7110	HF45 7110
1.8 Ω	HJ35 3180	※	12 kΩ	HJ35 7120	HF85 7120
2.2 Ω	HJ35 3220	HF85 3220	13 kΩ	HF45 7130	HF45 7130
3.3 Ω	HJ35 3330	HF85 3330	15 kΩ	HF45 7150	HF45 7150
4.7 Ω	HJ35 3470	HF85 3470	18 kΩ	HF45 7180	HF45 7180
5.6 Ω	HJ35 3560	HF85 3560	22 kΩ	HF45 7220	HF45 7220
10 Ω	HF45 4100	HF45 4100	24 kΩ	HF45 7240	HF45 7240
15 Ω	HJ35 4150	HF85 4150	27 kΩ	HJ35 7270	HF85 7270
22 Ω	HF45 4220	HF45 4220	30 kΩ	HF45 7300	HF45 7300
27 Ω	HJ35 4270	HF85 4270	33 kΩ	HF45 7330	HF45 7330
33 Ω	HF45 4330	HF45 4330	36 kΩ	HF45 7360	HF45 7360
39 Ω	HJ35 4470	HF85 4390	39 kΩ	HF45 7390	HF45 7390
47 Ω	HF45 4470	HF45 4470	47 kΩ	HF45 7470	HF45 7470
56 Ω	HF45 4560	HF45 4560	51 kΩ	HF45 7510	HF45 7510
68 Ω	HF45 4680	HF45 4680	56 kΩ	HF45 7560	HF45 7560
75 Ω	HF45 4750	HF45 4750	62 kΩ	HF45 7620	HF45 7620
82 Ω	HF45 4820	HF45 4820	68 kΩ	HF45 7680	HF45 7680
91 Ω	HF45 4910	HF45 4910	82 kΩ	HF45 7820	HF45 7820
100 Ω	HF45 5100	HF45 5100	91 kΩ	HF45 7910	HF45 7910
110 Ω	HJ35 5110	HF85 5110	100 kΩ	HF45 8100	HF45 8100
120 Ω	HF45 5120	HF45 5120	110 kΩ	HF45 8110	HF45 8110
150 Ω	HF45 5150	HF45 5150	120 kΩ	HF45 8120	HF45 8120
160 Ω	HJ35 5160	※	150 kΩ	HF45 8150	HF45 8150
180 Ω	HF45 5180	HF45 5180	180 kΩ	HF45 8180	HF45 8180
200 Ω	HF45 5200	HF45 5200	220 kΩ	HJ35 8220	HF85 8220
220 Ω	HF45 5220	HF45 5220	270 kΩ	HF45 8270	HF45 8270
270 Ω	HF45 5270	HF45 5270	300 kΩ	HF45 8300	HF45 8300
330 Ω	HF45 5330	HF45 5330	330 kΩ	HF45 8330	HF45 8330
390 Ω	HF45 5390	HF45 5390	390 kΩ	HJ35 8390	HF85 8390
430 Ω	HF45 5430	HF45 5430	470 kΩ	HF45 8470	HF45 8470
470 Ω	HF45 5470	HF45 5470	560 kΩ	HJ35 8560	HF85 8560
510 Ω	HF45 5510	HF45 5510	680 kΩ	HJ35 8680	HF85 8680
560 Ω	HF45 5560	HF45 5560	820 kΩ	HJ35 8820	HF85 8820
680 Ω	HF45 5680	HF45 5680	1.0 MΩ	HF45 9100	HF45 9100
820 Ω	HF45 5820	HF45 5820	1.2 MΩ	HJ35 9120	※
910 Ω	HF45 5910	HF45 5910	1.5 MΩ	HJ35 9150	HF85 9150
1.0 k	HF45 6100	HF45 6100	1.8 MΩ	HJ35 9180	HF85 9180
1.2 kΩ	HF45 6120	HF45 6120	2.2 MΩ	HJ35 9220	HF85 9220
1.5 kΩ	HF45 6150	HF45 6150	3.3 MΩ	HJ35 9330	HF85 9330
1.8 kΩ	HF45 6180	HF45 6180	3.9 MΩ	HJ35 9390	※
2.0 kΩ	HJ35 6200	HF85 6200	4.7 MΩ	HJ35 9470	HF85 9470
2.2 kΩ	HF45 6220	HF45 6220			
2.4 kΩ	HJ35 6240	HF85 6240			
2.7 kΩ	HF45 6270	HF45 6270		1/4W Type HF45○○○○ 1/6W Type HF85○○○○ ←10mm→ ←5mm→	
3.0 kΩ	HF45 6300	HF45 6300			
3.3 kΩ	HF45 6330	HF45 6330			
3.6 kΩ	HJ35 6360	HF85 6360			
3.9 kΩ	HF45 6390	HF45 6390			
4.7 kΩ	HF45 6470	HF45 6470			
5.1 kΩ	HF45 6510	HF45 6510			
5.6 kΩ	HF45 6560	HF45 6560			
6.8 kΩ	HF45 6680	HF45 6680			
8.2 kΩ	HF45 6820	HF45 6820			
9.1 kΩ	HF45 6910	HF45 6910			
10 kΩ	HF45 7100	HF45 7100			

※ : Not available

• OVERALL ASS'Y

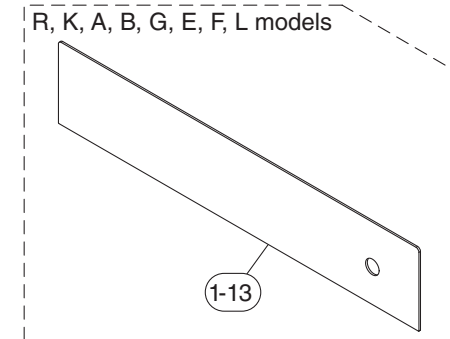


	Ref No.	Part No.	Description	Remarks	Markets
	2-1	WN241400	P. C. B. ASS' Y	MAIN	UC
	2-1	WN241500	P. C. B. ASS' Y	MAIN	RA
	2-1	WN241600	P. C. B. ASS' Y	MAIN	T
	2-1	WN241700	P. C. B. ASS' Y	MAIN	KL
	2-1	WN241800	P. C. B. ASS' Y	MAIN	BGEF
*	2-8	WR395000	FLEXIBLE FLAT CABLE	20P 180mm P=1.25	
*	2-9	WR387000	FLEXIBLE FLAT CABLE	13P 120mm P=1.25	
*	5	WQ890400	P. C. B. ASS' Y	OPERATION	UC
*	5	WQ890500	P. C. B. ASS' Y	OPERATION	RL
*	5	WQ890600	P. C. B. ASS' Y	OPERATION	T
*	5	WQ890700	P. C. B. ASS' Y	OPERATION	KABGEF
	6	WN243200	P. C. B. ASS' Y	HDMI	
	12	WB877300	AM/FM TUNER	FAE381-A07F	UCRTL
	12	WB877400	AM/FM TUNER	FAE481-E07F	KABGEF
△	15	X9582A00	POWER TRANSFORMER		UC
△	15	X9583A00	POWER TRANSFORMER		RL
△	15	X9584A00	POWER TRANSFORMER		TK
△	15	X9585A00	POWER TRANSFORMER		A
△	15	X9586A00	POWER TRANSFORMER		BGEF
△	16	WB120500	POWER CABLE	2m	UC
△	16	WC992700	POWER CABLE	2m	R
△	16	WB120600	POWER CABLE	2m	T
△	16	WC753000	POWER CABLE	2m	K
△	16	WC743700	POWER CABLE	2m	A
△	16	WB212200	POWER CABLE	2m	B
△	16	WB212300	POWER CABLE	2m	GEFL
	17	V2438700	CORD STOPPER	10P1	
	24	MF114100	FLEXIBLE FLAT CABLE	14P 100mm P=1.25	UC
	101	WE065200	TOP COVER	GD	
	101	WE065000	TOP COVER	BL	
	101	WE065100	TOP COVER	TI	
	101	WG481900	TOP COVER	SI	
*	103	WQ891200	REAR PANEL	V365	UC
*	103	WQ891300	REAR PANEL	V365	R
*	103	WQ891400	REAR PANEL	V365	T
*	103	WQ891500	REAR PANEL	V365	K
*	103	WQ891600	REAR PANEL	V365	A
*	103	WQ891700	REAR PANEL	V365	BGEF
*	103	WQ891900	REAR PANEL	V365	L
*	103	WQ892000	REAR PANEL	6230	UC
*	103	WQ892100	REAR PANEL	6230	R
*	103	WQ892200	REAR PANEL	6230	T
*	103	WQ892300	REAR PANEL	6230	K
*	103	WQ892400	REAR PANEL	6230	GEF
	109	WA796100	P. C. B. SUPPORT		
	120	WA790600	LEG	D60/H21 GD	GD
	120	WA790500	LEG	D60/H21 HS	BL, TI, SI
*	121	WQ822800	KNOB D50	GD	
*	121	WQ822700	KNOB D50	BL	
*	121	WQ823000	KNOB D50	TI	
*	121	WQ822900	KNOB D50	SI	
	151	WB408400	DAMPER	10x30 t=4	
	152	WP126800	DAMPER	SCREW MASK	

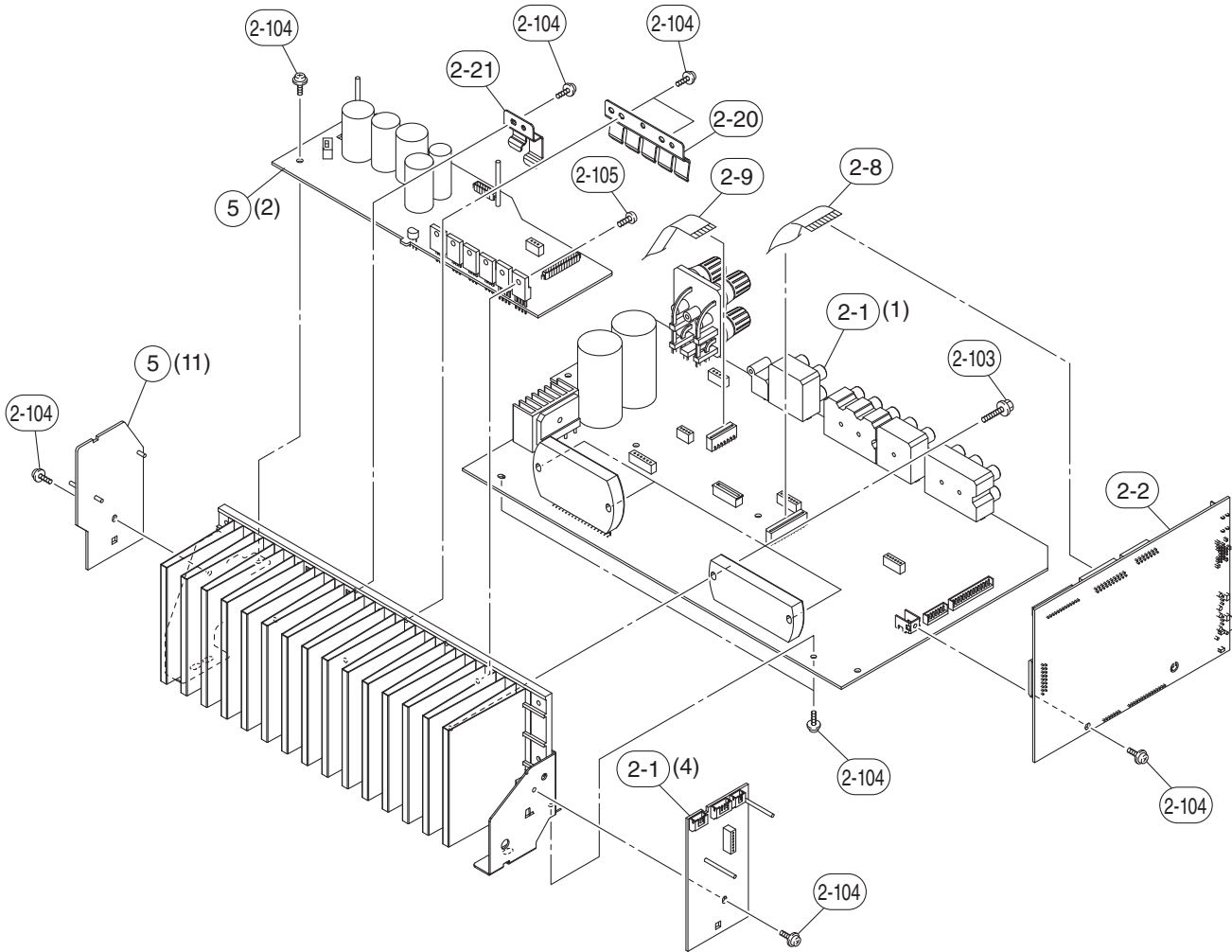
* New Parts

	Ref No.	Part No.	Description	Remarks	Markets
	156	WJ589800	SHEET TOP		RTKABGEFL
	157	WJ323900	RIVET TOP		RTKABGEFL
	160	WE774100	BIND HEAD BONDING B-T. SCREW	3x8 MFZN2B3	
	163	WE774300	BIND HEAD B-TIGHT SCREW	3x8 MFZN2W3	
	165	WE877900	BIND HEAD S-TIGHT SCREW	3x6 MFZN2W3	
	167	WF002600	PW HEAD B-TIGHT SCREW	3x8 MFZN2W3	
	168	WE774600	SCREW IC	3x18 MFZN2W3	
	170	WE774700	BIND HEAD S-TIGHT SCREW	4x10 MFZN2W3	
	171	VD069600	PW HEAD S-TIGHT SCREW	4x8-10 MFN133	GD, TI, SI
	171	VH313200	PW HEAD S-TIGHT SCREW	4x8-10 MFN13BL	BL
	172	WE200400	DISH HEAD B-TIGHT SCREW	3x6 MFN133	GD, TI, SI
	172	WE200500	DISH HEAD B-TIGHT SCREW	3x6 MFN13BL	BL
			ACCESSORIES		
	200	WN058100	REMOTE CONTROL	RAV283	UC
	200	WN058200	REMOTE CONTROL	RAV284	RTKAL
	200-1	AAX82380	BATTERY COVER		CG-2209 UCRTKAL
	201	WN466800	REMOTE CONTROL	RAV34	BGEF
	201-1	AAX70730	BATTERY COVER		CG-8912 BGEF
	202	WB212500	INDOOR FM ANTENNA	1.4m 1pc	UCRTL
	202	WB212400	INDOOR FM ANTENNA	1.4m 1pc	KABGEF
	203	WB212600	AM LOOP ANTENNA	1.0m 1pc	
	204	WN649600	OPTIMIZER MICROPHONE	6.0m 1pc	EM6022L-HN1700 RKABGEFL
*	205	WR476100	SHEET BATTERY	1pc R03, AAA, UM-4 2pcs	T
			SERVICE TOOL		
		MF117350	FLEXIBLE FLAT CABLE	17P 350mm P=1.25	

* New Parts

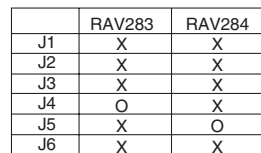
* New Parts

AMP UNIT

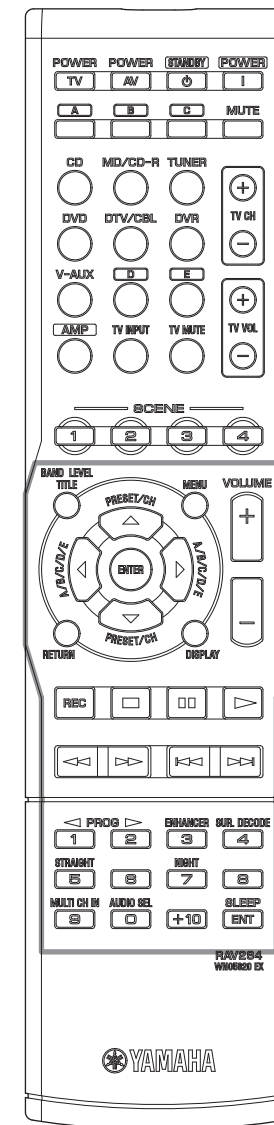


Ref No.	Part No.	Description		Remarks	Markets
2-1	WN241400	P. C. B. ASS'Y	MAIN		UC
2-1	WN241500	P. C. B. ASS'Y	MAIN		RA
2-1	WN241600	P. C. B. ASS'Y	MAIN		T
2-1	WN241700	P. C. B. ASS'Y	MAIN		KL
2-1	WN241800	P. C. B. ASS'Y	MAIN		BGEF
2-2	WN242100	P. C. B. ASS'Y	DSP		UC
2-2	WN242200	P. C. B. ASS'Y	DSP		RL
2-2	WN242300	P. C. B. ASS'Y	DSP		T
2-2	WN242400	P. C. B. ASS'Y	DSP		KA
2-2	WN242500	P. C. B. ASS'Y	DSP		BGEF
* 2-8	WR395000	FLEXIBLE FLAT CABLE	20P 180mm P=1.25		
* 2-9	WR387000	FLEXIBLE FLAT CABLE	13P 120mm P=1.25		
2-20	WG451000	SUPPORT TR	5P		
2-21	WJ187700	SUPPORT TR	2P		
2-103	WE774600	SCREW IC	3x18 MFZN2W3		
2-104	WF002600	PW HEAD B-TIGHT SCREW	3x8 MFZN2W3		
2-105	WE774300	BIND HEAD B-TIGHT SCREW	3x8 MFZN2W3		
* 5	WQ890400	P. C. B. ASS'Y	OPERATION		UC
* 5	WQ890500	P. C. B. ASS'Y	OPERATION		RL
* 5	WQ890600	P. C. B. ASS'Y	OPERATION		T
* 5	WQ890700	P. C. B. ASS'Y	OPERATION		KABGEF

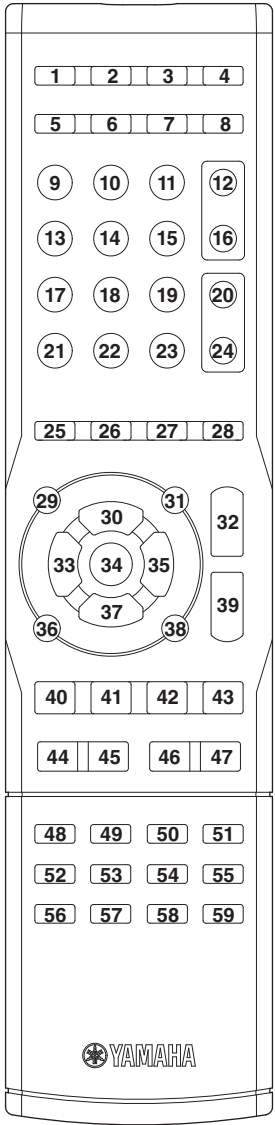
* New Parts



R, T, K, A, L models



KEY NO. LAYOUT

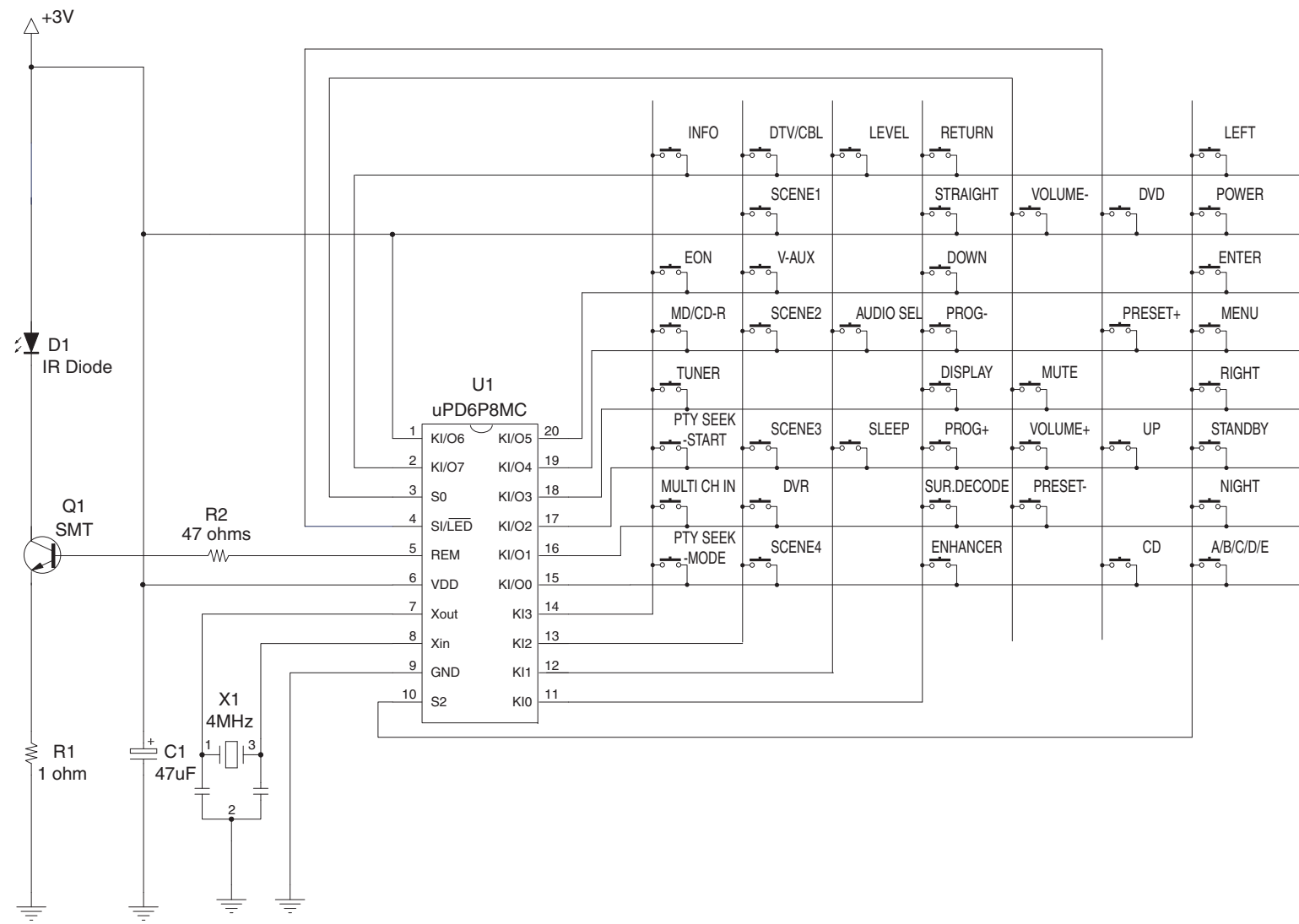


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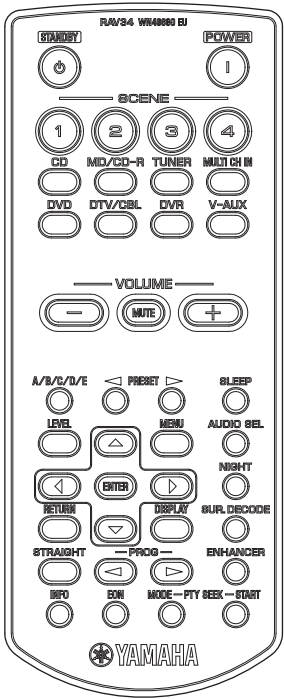
Key No.	Label		Command key	AMP										
	U, C, R, K, A, L models	T model												
1	TV / POWER		–	(TV POWER)	(TV POWER)	(TV POWER)	(TV POWER)	(TV POWER)	TV POWER	(TV POWER)	(TV POWER)	(TV POWER)	(TV POWER)	TV POWER
2	AV / POWER		–	(device)	79-60	7F-80	D1-1B	7C-80	(DVR POWER)	048.012	7F01-00	–	–	(DVR POWER)
3	STANDBY		O	7E-7F	STANDBY									
4	POWER		O	7E-7E	POWER									
5	A		O	7F01-3F	A									
6	B		O	7A-B4	B									
7	C		O	7A-39	C									
8	MUTE		O	7A-1C	MUTE									
9	CD		O	7A-15	CD									
10	MD/CD-R		O	7A-C9	MD/CD-R									
11	TUNER		O	7A-16	TUNER									
12	TV CH +		–	(TV CH +)	(TV CH +)	(TV CH +)	(TV CH +)	(TV CH +)	TV CH +	(TV CH +)	(TV CH +)	(TV CH +)	(TV CH +)	TV CH +
13	DVD		O	7A-C1	DVD									
14	D-TV/CBL		O	7A-54	DTV/CBL									
15	DVR		O	7A-13	DVR									
16	TV CH -		–	(TV CH -)	(TV CH -)	(TV CH -)	(TV CH -)	(TV CH -)	TV CH -	(TV CH -)	(TV CH -)	(TV CH -)	(TV CH -)	TV CH -
17	V-AUX/DOCK		O	7A-55	V-AUX (/DOCK)									
18	D		O	7A-0F	VCR									
19	E		O	7A-14	PHONO									
20	TV VOL +		–	(TV VOL +)	(TV VOL +)	(TV VOL +)	(TV VOL +)	(TV VOL +)	TV VOL +	(TV VOL +)	(TV VOL +)	(TV VOL +)	(TV VOL +)	TV VOL +
21	AMP		O		Enter into AMP mode									
					9	10	11	13	14	15	17	18	19	
					CD	MD/CD-R	TUNER	DVD	DTV/CBL	DVR	V-AUX/DOCK	VCR	PHONO	
22	TV INPUT		–	(TV INPUT)	(TV INPUT)	(TV INPUT)	(TV INPUT)	(TV INPUT)	TV INPUT	(TV INPUT)	(TV INPUT)	(TV INPUT)	(TV INPUT)	TV INPUT
23	TV MUTE		–	(TV MUTE)	(TV MUTE)	(TV MUTE)	(TV MUTE)	(TV MUTE)	TV MUTE	(TV MUTE)	(TV MUTE)	(TV MUTE)	(TV MUTE)	TV MUTE
24	TV VOL -		–	(TV VOL -)	(TV VOL -)	(TV VOL -)	(TV VOL -)	(TV VOL -)	TV VOL -	(TV VOL -)	(TV VOL -)	(TV VOL -)	(TV VOL -)	TV VOL -
25	SCENE 1		O	7A-007F	SCENE SELECT									
26	SCENE 2		O	7A-037C	SCENE SELECT									
27	SCENE 3		O	7A-0679	SCENE SELECT									
28	SCENE 4		O	7A-0976	SCENE SELECT									
29	TITLE	标题	–	7A-86	–	–	7A-AE	7C-B1	–	048.200	7F01-0D	–	–	–
30	▲ (UP)		–	7A-9D	–	–	7A-10	7C-B4	–	048.088	7F01-0E	–	–	–
31	MENU	菜单	–	7A-84	–	–	7A-AB	7C-B2	–	048.084	7F01-0F	–	–	–
32	VOLUME +	音量+	O	7A-1A	VOLUME +									
33	◀ (LEFT)		–	7A-9F	–	–	7A-AC	7C-B5	–	048.090	7F01-10	–	–	–
34	ENTER		–	7A-DE	–	–	7A-AD	7C-B8	–	048.092	7F01-11	–	–	–
35	▶ (RIGHT)		–	7A-9E	–	–	7A-12	7C-B6	–	048.091	7F01-12	–	–	–
36	RETURN	返回	–	7A-AA	–	–	7A-AF	7C-B7	–	048.131	7F01-13	–	–	–
37	▼ (DOWN)		–	7A-9C	–	–	7A-11	7C-B3	–	048.089	7F01-14	–	–	–
38	DISPLAY	显示	–	7A-C2	79-0A	7F-9E	7A-B0	7C-A6	–	048.015	7F01-15	–	–	–
39	VOLUME -	音量–	O	7A-1B	VOLUME -									
40	REC		–	(device)	7A-4F	–	–	7C-8B	(DVR REC)	048.055	7F01-16	–	–	(DVR REC)
41	■ (STOP)		–	(device)	7A-09	7F-84	–	7C-85	(DVR STOP)	048.049	7F01-1D	–	–	(DVR STOP)
42	⏸ (PAUSE)		–	(device)	7A-09	7F-83	–	7C-83	(DVR PAUSE)	048.048	7F01-1A	–	–	(DVR PAUSE)
43	▶ (PLAY)		–	(device)	7A-08	7F-82	–	7C-82	(DVR PLAY)	048.044	7F01-1E	–	–	(DVR PLAY)
44	◀◀ (SEARCH -)		–	(device)	7A-0D	7F-88	7A-A4	7C-86	(DVR REW)	048.041	7F01-17	–	–	(DVR REW)
45	▶▶ (SEARCH +)		–	(device)	7A-0C	7F-89	7A-A5	7C-87	(DVR FF)	048.040	7F01-18	–	–	(DVR FF)
46	◀◀ (SKIP -)		–	(device)	7A-0B	7F-86	7A-A6	7C-B9	(DVR SKIP -)	048.033	7F01-1B	–	–	(DVR SKIP -)
47	▶▶ (SKIP +)		–	(device)	7A-0A	7F-87	7A-A7	7C-BA	(DVR SKIP +)	048.032	7F01-1C	–	–	(DVR SKIP +)
48	1 / PROG ◀	程序 ◀	–	7A-59	79-11	7F-91	7A-E5	7C-94	–	048.001	7F01-01	–	–	–
49	2 / PROG ▶	程序 ▶	–	7A-58	79-12	7F-92	7A-E6	7C-95	–	048.002	7F01-02	–	–	–
50	3 / ENHANCER	强化	–	7A-94	79-13	7F-93	7A-E7	7C-96	–	048.003	7F01-03	–	–	–
51	4 / SUR.DECODE	环绕	–	7A-8D	79-14	7F-94	7A-E8	7C-97	–	048.004	7F01-04	–	–	–
52	5 / STRAIGHT	直接立体声	–	7A-56	79-15	7F-95	7A-E9	7C-98	–	048.005	7F01-05	–	–	–
53	6		–	7A-DD	79-16	7F-96	7A-EA	7C-99	–	048.006	7F01-06	–	–	–
54	7 / NIGHT	夜間	–	7A-95	79-17	7F-97	7A-EB	7C-9A	–	048.007	7F01-07	–	–	–
55	8		–	7A-C4	79-18	7F-98	7A-EC	7C-9B	–	048.008	7F01-08	–	–	–
56	9 / MULTI CH IN	多声道输入	–	7A-87	79-19	7F-99	7A-B1	7C-9C	–	048.009	7F01-09	–	–	–
57	0 / AUDIO SEL	音频选择	–	7A-C3	79-10	7F-90	7A-B2	7C-93	–	048.000	7F01-0A	–	–	–
58	+10		–	–	79-1A	7F-9A	–	7C-9D	–	–	7F01-0B	–	–	–
59	ENTER / SLEEP	睡眠	–	7A-57	79-0B	7F-8A	7A-B3	7C-9E	–	–	7F01-0C	–	–	–

● RAV34: B, G, E, F models

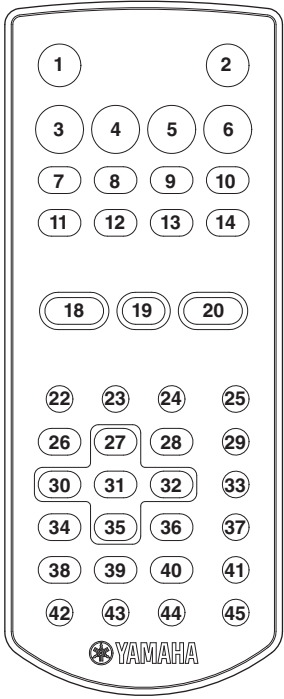
SCHEMATIC DIAGRAM



PANEL



KEY NO. LAYOUT



KEY CODE

Key No.	Key Name	Custom Code	Data Code
1	STANDBY	7E	7F
2	POWER	7E	7E
3	SCENE1	7A	007F
4	SCENE2	7A	037C
5	SCENE3	7A	0679
6	SCENE4	7A	0976
7	CD	7A	15
8	MD/CD-R	7A	C9
9	TUNER	7A	16
10	MULTI CH IN	7A	87
11	DVD	7A	C1
12	DTV/CBL	7A	54
13	DVR	7A	13
14	V-AUX	7A	55
18	VOLUME-	7A	1B
19	MUTE	7A	1C
20	VOLUME+	7A	1A
22	A/B/C/D/E	7A	12
23	PRESET-	7A	11
24	PRESET+	7A	10
25	SLEEP	7A	57
26	LEVEL	7A	86
27	UP	7A	9D
28	MENU	7A	84
29	AUDIO SEL	7A	C3
30	LEFT	7A	9F
31	ENTER	7A	DE
32	RIGHT	7A	9E
33	NIGHT	7A	95
34	RETURN	7A	AA
35	DOWN	7A	9C
36	DISPLAY	7A	C2
37	SUR.DECODE	7A	8D
38	STRAIGHT	7A	56
39	PROG-	7A	59
40	PROG+	7A	58
41	ENHANCER	7A	94
42	INFO	7A	A4
43	EON	7A	A5
44	PTY SEEK-MODE	7A	A6
45	PTY SEEK-START	7A	A7

Advanced setup

This unit has additional menus that are displayed on the front panel display. The advanced setup menu offers additional operations to adjust and customize the way this unit operates. Change the initial settings (indicated by (*) in this following parameter) to reflect the needs of your listening environment.

Notes

- Only **ⒶSTANDBY/ON**, **ⓁPROGRAM** $\triangleleft/\triangleright$ and **ⓂSTRAIGHT** are effective while you are using the advanced setup menu.
- No other operations can be made while you are using the advanced setup menu.
- The advanced setup menu is only available on the front panel display.

1 Press **ⒶSTANDBY/ON on the front panel to set this unit to the standby mode.**

2 Press and hold **ⓀTONE CONTROL and then press **ⒶSTANDBY/ON** to turn on this unit.**

This unit turns on, and the advanced setup menu appears on the front panel display.

3 Press **ⓁPROGRAM $\triangleleft/\triangleright$ to select the parameter you want to adjust.**

The name of the selected parameter appears on the front panel display.

4 Press **ⓂSTRAIGHT repeatedly to change the selected parameter setting.**

5 Press **ⒶSTANDBY/ON to confirm your selection and set this unit to the standby mode.**



- The settings you made are reflected next time you turn on this unit.

■ Speaker impedance **SP IMP.** (U.S.A. and Canada models only)

Caution

If you are to use 6 ohm speakers, set “SP IMP.” to “6ΩMIN” as follows BEFORE using this unit.

Use this feature to set the speaker impedance of this unit so that it matches that of your speakers.

Choices: 8ΩMIN*, 6ΩMIN

- Select “8ΩMIN” to set the speaker impedance to 8 Ω .
- Select “6ΩMIN” to set the speaker impedance to 6 Ω .

SP IMP.	Speaker	Impedance level
8ΩMIN	Front (A or B)	The impedance of each speaker must be 8 Ω or higher.
	Center	
	Surround	
6ΩMIN	Front (A or B)	The impedance of each speaker must be 6 Ω or higher.
	Center	
	Surround	

■ Initializing **PRESET**

Use this feature to reset all the parameters of this unit to the initial factory settings.

Choices: CANCEL*, RESET

- Select “CANCEL” not to reset any parameters of this unit.
- Select “RESET” to reset the parameters of this unit.

Notes

- This setting completely resets all the parameters of this unit including the set menu parameters. However, the advanced setup menu parameters will not be initialized.
- The initial factory settings are activated next time you turn on this unit.

RX-V365/HTR-6230



YAMAHA
