XR-C6210R/C6220R

SERVICE MANUAL

AEP Model
UK Model

For RM-X4S (Remote Commander), please refer to RM-X4S Service Manual (9-925-698-□□) previously issued.

Photo: XR-C6210R

Model Name Using Similar Mechanism	XR-C6100R
Tape Transport Mechanism Type	MG-25Y-136

SPECIFICATIONS

Cassette player section

Tape track	4-track 2-channel stereo
Wow and flutter	0.08 % (WRMS)
Frequency response	30 – 18,000 Hz
Signal-to-noise ratio	

Cassette type	
TYPE II, IV*	61 dB
TYPE I	58 dB

* XR-C6220R only

Tuner section

FM

Tuning range	87.5 – 108.0 MHz
Aerial terminal	External aerial connector
Intermediate frequency	10.7 MHz
Usable sensitivity	9 dBf
Selectivity	75 dB at 400 kHz
Signal-to-noise ratio	65 dB (stereo), 68 dB (mono)
Harmonic distortion at 1 kHz	0.7 % (stereo), 0.4 % (mono)
Separation	35 dB at 1 kHz
Frequency response	30 – 15,000 Hz

MW/LW

Tuning range	MW: 531 – 1,602 kHz LW: 153 – 281 kHz
Aerial terminal	External aerial connector
Intermediate frequency	10.7 MHz/450 kHz
Sensitivity	MW: 30 µV LW: 50 µV

Power amplifier section

Outputs	Speaker outputs (sure seal connectors)
Speaker impedance	4 – 8 ohms
Maximum power output	40 W × 4 (at 4 ohms)

General

Outputs	XR-C6220R: Audio outputs (2) XR-C6210R: Audio output (1) Power aerial relay control lead Power amplifier control lead Telephone ATT control lead (XR-C6220R only)
Tone controls	Bass ±8 dB at 100 Hz Treble ±8 dB at 10 kHz
Power requirements	12 V DC car battery (negative earth)
Dimensions	Approx. 188 × 58 × 181 mm (w/h/d)
Mounting dimensions	Approx. 182 × 53 × 164 mm (w/h/d)
Mass	Approx. 1.2 kg
Supplied accessories	Rotary commander (1) Parts for installation and connections (1 set) Front panel case (1)

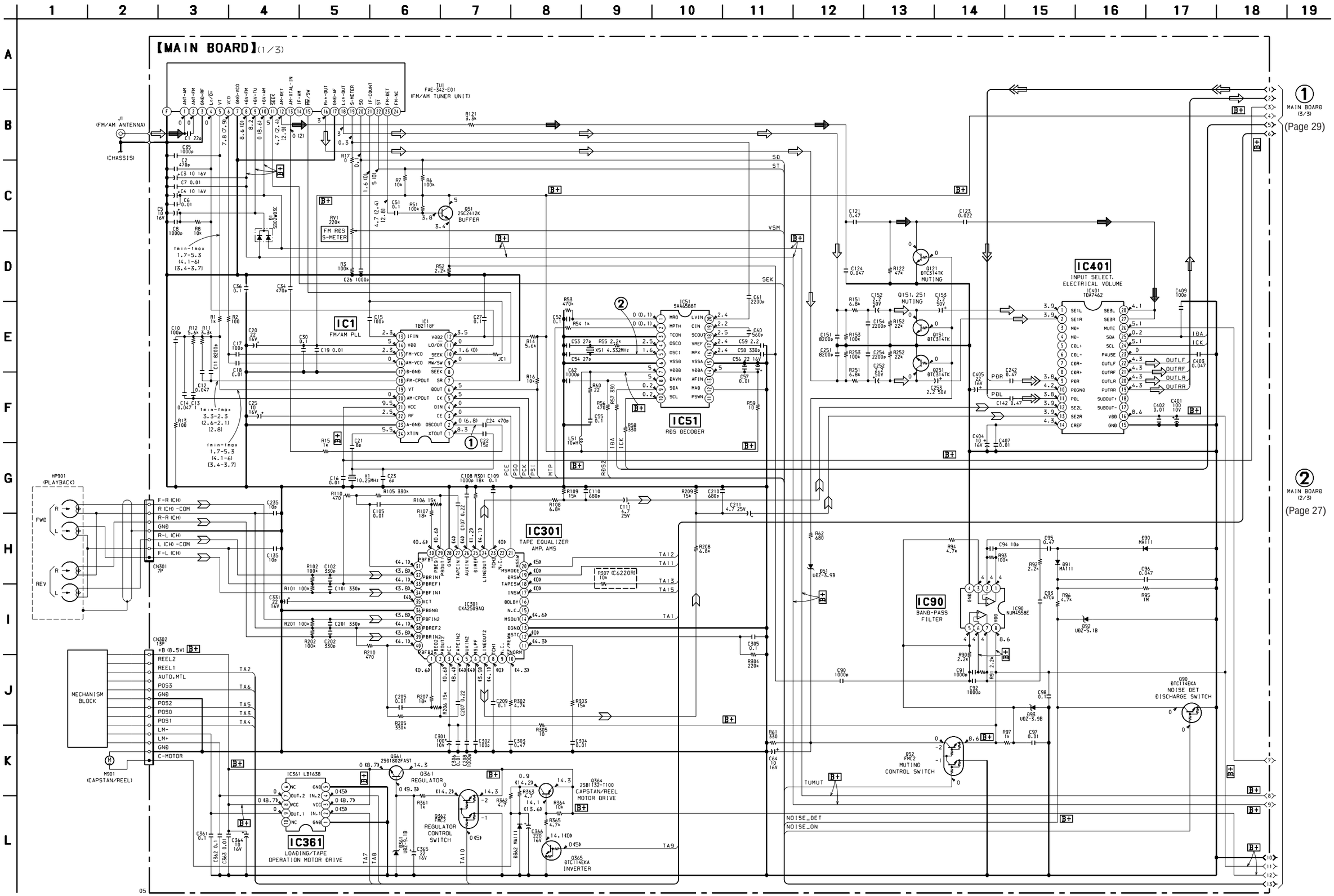
Design and specifications are subject to change without notice.

FM/MW/LW CASSETTE CAR STEREO

MICROFILM

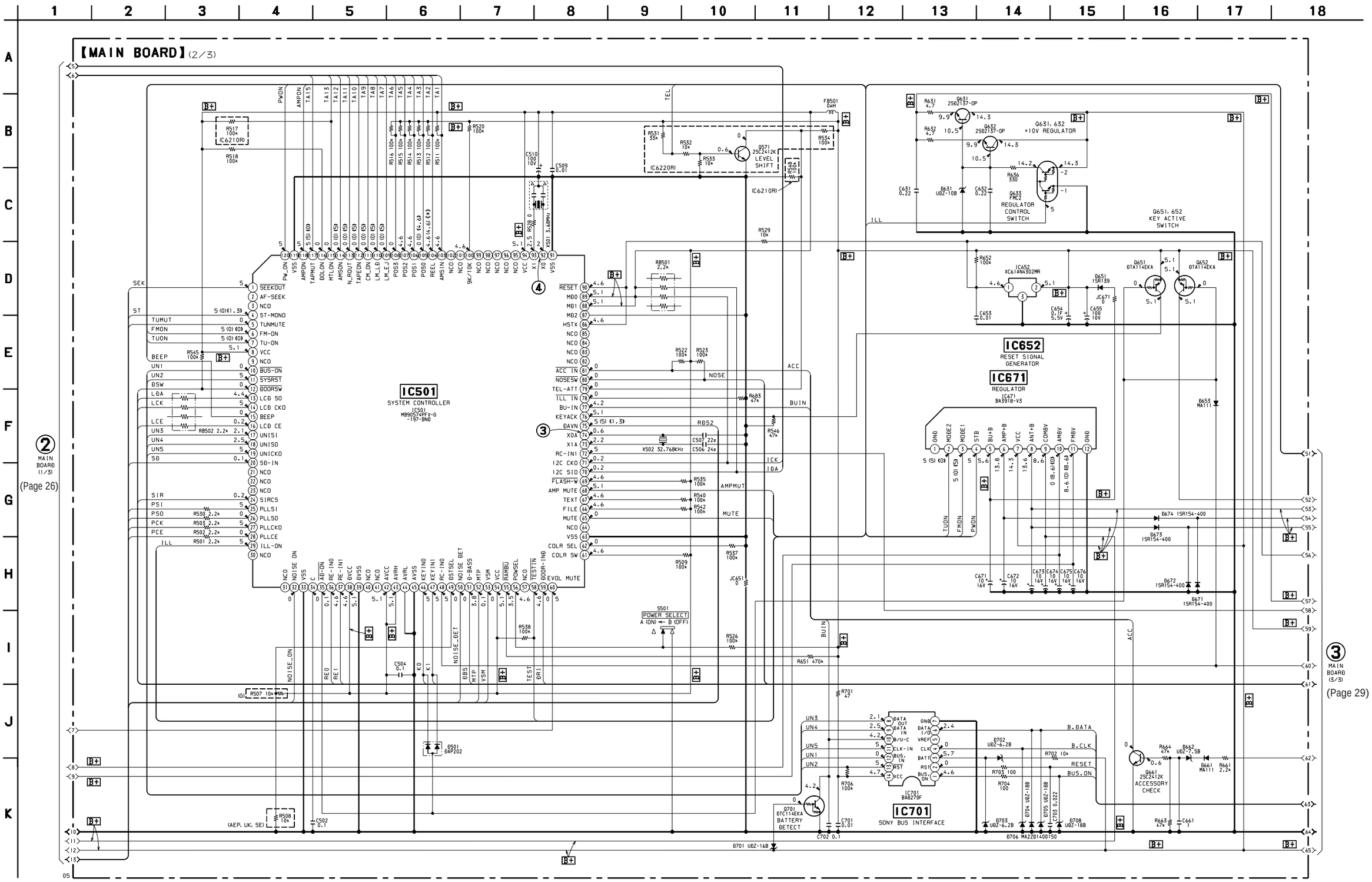
SONY®

6-5. SCHEMATIC DIAGRAM – MAIN Section (1/3) – • See page 24 for Waveforms. • See page 39 for IC Block Diagrams.

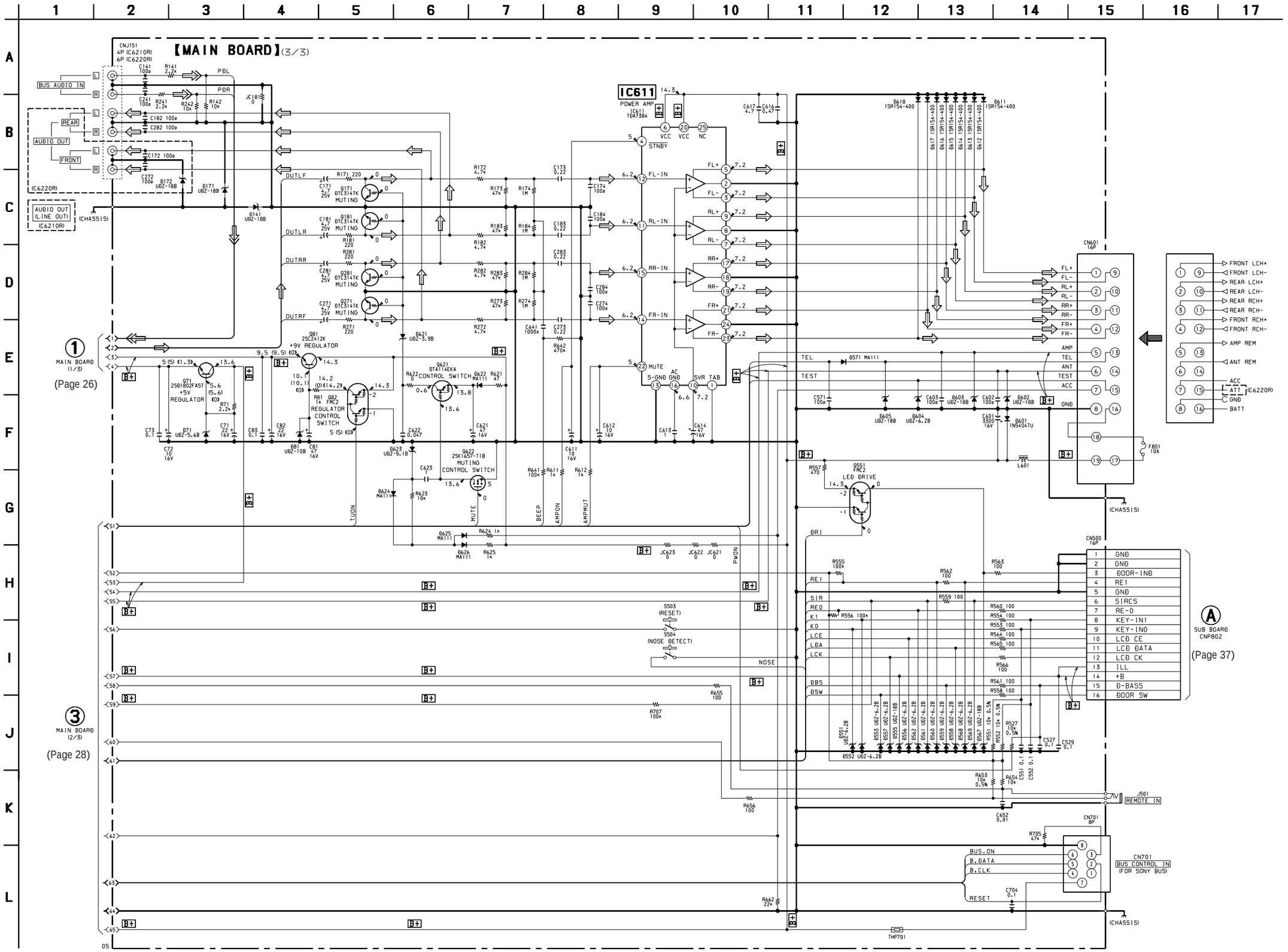


6-6. SCHEMATIC DIAGRAM – MAIN Section (2/3) –

• See page 24 for Waveforms. • See page 39 for IC Block Diagrams.



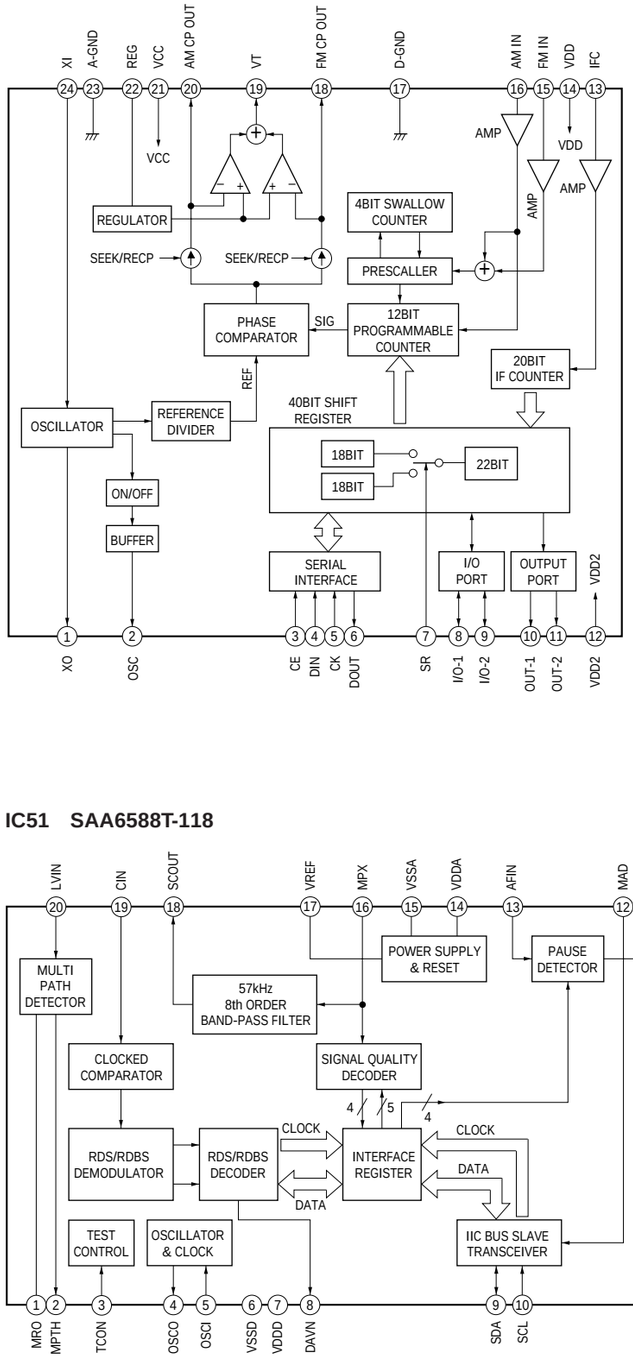
6-7. SCHEMATIC DIAGRAM – MAIN Section (3/3) –



6-11. SCHEMATIC DIAGRAM – PANEL Section – • See page 24 for Waveform.

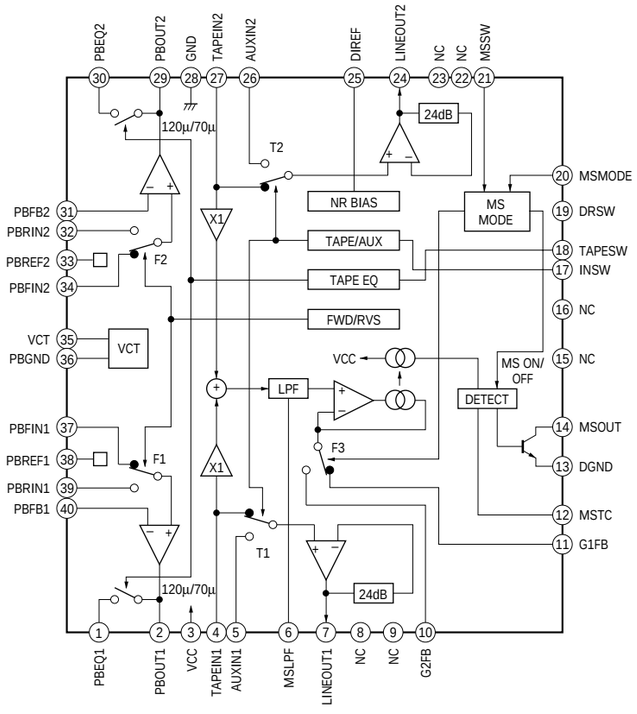
• IC Block Diagrams
– MAIN Board –

IC1 TB2118F (EL)

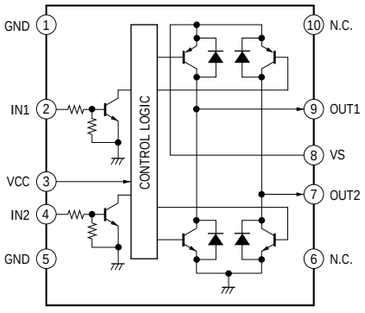


IC51 SAA6588T-118

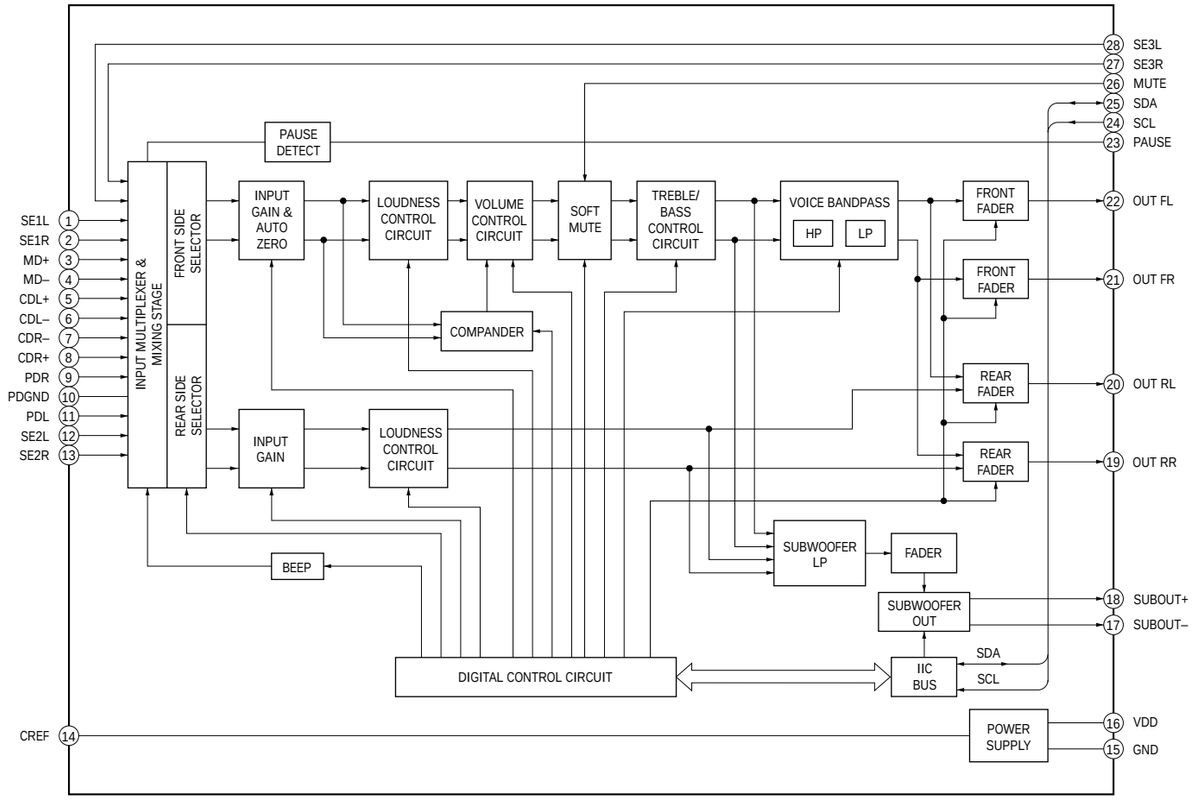
IC301 CXA2509AQ-T4



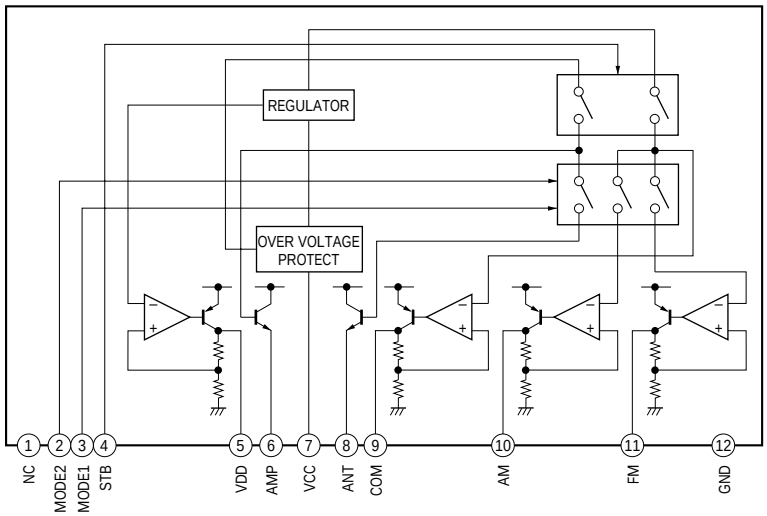
IC361 LB1638M



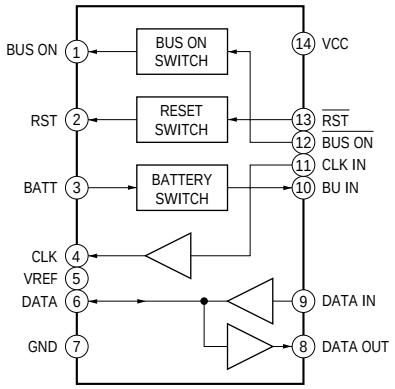
IC401 TDA7462D



IC671 BA3918-V3



IC701 BA8270F-E2



6-12. IC PIN FUNCTION DESCRIPTION

• MAIN BOARD IC501 MB90574PFV-G-197-BND (SYSTEM CONTROLLER)

Pin No.	Pin Name	I/O	Function
1	$\overline{\text{SEEKOUT}}$	O	Seek control signal output to the FM/AM tuner unit (TU1) AM mode: Used for IF count output/SD output request/AGC cut at SEEK or BTM FM mode: Used for SD speed up at SEEK, BTM, or AF "L" is output at tuner off
2	AF-SEEK	O	PLL low-pass filter time constant selection signal output at AF SEEK "H" is output when AF SEEK Not used (open)
3	NCO	O	Not used (open)
4	ST-MONO	I/O	FM stereo broadcasting detection signal input from the FM/AM tuner unit (TU1), or forced monaural control signal output to the FM/AM tuner unit (TU1) "L" is input in the FM stereo mode, or "L" is output in the forced monaural mode
5	TUNMUTE	O	Muting on/off control signal output of the FM and AM tuner signal "H": muting on
6	FM-ON	O	FM system power supply on/off control signal output to the BA3918 (IC671) "L": AM power on, "H": FM power on
7	TU-ON	O	Tuner system power supply on/off control signal output to the BA3918 (IC671) "H": tuner power on
8	VCC	—	Power supply terminal (+5V)
9	NCO	O	Not used (open)
10	$\overline{\text{BUS-ON}}$	O	Bus on/off control signal output to the SONY bus interface (IC701) "L": bus on
11	$\overline{\text{SYSRST}}$	O	Reset signal output to the SONY bus interface (IC701) "L": reset
12	$\overline{\text{DOORSW}}$	I	Front panel open/close detection signal input "L" is input when the front panel is closed
13	LCD SO	O	Serial data output to the liquid crystal display driver (IC901)
14	LCD CKO	O	Serial data transfer clock signal output to the liquid crystal display driver (IC901)
15	BEEP	O	Beep sound drive signal output terminal
16	LCD CE	O	Chip enable signal output to the liquid crystal display driver (IC901) "H" active
17	UNISI	I	Serial data input from the SONY bus interface (IC701)
18	UNISO	O	Serial data output to the SONY bus interface (IC701)
19	UNICKO	O	Serial data transfer clock signal output to the SONY bus interface (IC701)
20	SD-IN	I	Station detector detect input from the FM/AM tuner unit (TU1) Stop level for SEEK, BTM, etc. is determined SD is present at input of "H"
21 to 23	NCO	O	Not used (open)
24	SIRCS	I	Sircs remote control signal input terminal Not used (fixed at "H")
25	PLLSI	I	PLL serial data input from the FM/AM PLL (IC1)
26	PLLSO	O	PLL serial data output to the FM/AM PLL (IC1)
27	PLLCKO	O	PLL serial data transfer clock signal output to the FM/AM PLL (IC1)
28	PLLCE	O	PLL chip enable signal output to the FM/AM PLL (IC1) "H" active
29	ILL-ON	O	Power on/off control signal output of the illumination LED and liquid crystal display driver (IC901) "H": power on Depends on initial setting of power select switch (S501) Power select switch (S501) on: "H" output at the accessory on Power select switch (S501) off: "H" output at the power on
30, 31	NCO	O	Not used (open)
32	NOISE ON	O	Discharge control signal output for the noise detection circuit "H": discharge
33	VSS	—	Ground terminal
34	C	—	Connected to coupling capacitor for the power supply
35	$\overline{\text{AD-ON}}$	O	A/D converter power control signal output terminal When the KEYACK (pin ⑯) that controls reference voltage power for key A/D conversion input is active, "L" is output from this terminal to enable the input
36	RE-IN0	I	Dial pulse input of the rotary encoder (RE900) (for VOLUME/BASS/TREBLE/BALANCE/FADER control)
37	RE-IN1	I	

Pin No.	Pin Name	I/O	Function
38	DVCC	—	Power supply terminal (+5V) (for D/A converter)
39	DVSS	—	Ground terminal (for D/A converter)
40, 41	NCO	O	Not used (open)
42	AVCC	—	Power supply terminal (+5V) (for A/D converter)
43	AVRH	I	Reference voltage (+5V) input terminal (for A/D converter)
44	AVRL	I	Reference voltage (0V) input terminal (for A/D converter)
45	AVSS	—	Ground terminal (for A/D converter)
46	KEYIN0	I	Key input terminal (A/D input) (LSW901 to LSW904, S901, LSW906) OFF, SOURCE, MODE ◄II►, SOUND, SEEK/AMS I◄◄ ◄◄ – ►►I ►► +, SHIFT keys input
47	KEYIN1	I	Key input terminal (A/D input) (LSW801, LSW922, LSW923, LSW925 to LSW933) ⏏, PRESET DISC –/+, AF/TA, PTY LIST, DSPL, 6, 5 ENTER, 4 →, 3 PLAY MODE, 2 SET UP, 1 ← keys input
48	RC-IN0	I	Rotary remote commander key input terminal (A/D input)
49	DSTSEL	I	Destination setting terminal (AEP and UK models: fixed at "L", German model: fixed at "H")
50	NOISE DET	I	Noise level detection signal input at SEEK mode (A/D input)
51	D-BASS	I	D-BASS switch (S981) input terminal (A/D input)
52	MTP	I	Multi-path detection signal input from the RDS decoder (IC51)
53	VSM	I	FM and AM signal meter voltage detection input from the FM/AM tuner unit (TU1) (A/D input)
54	VCC	—	Power supply terminal (+5V)
55	$\overline{\text{RAMBU}}$	I	Internal RAM reset detection signal input terminal Input terminal to check that RAM data are not destroyed due to low voltage This checking is made within 100 msec after reset Fixed at "H" in this set
56	POWSEL	I	Power select switch (S501) input terminal "L": off (halt mode), "H": on (operation mode)
57	NCO	O	Not used (open)
58	$\overline{\text{TESTIN}}$	I	Setting terminal for the test mode "L": test mode, Normally: fixed at "H"
59	DOOR-IND	O	LED drive signal output of the tape window illumination and ⏏ indicators (LED801, LSW801) "H": LED on "H" is output to turn on LED when front panel is opened
60	EVOL MUTE	O	Muting control signal output to the electrical volume (IC401) Volume minimum: "∞" output ("H" active)
61	COLR SW	I	Setting terminal for the illumination color "L": 2 colors, "H": 1 color (fixed at "H" in this set)
62	COLR SEL	I	Setting terminal for the illumination color "L": amber, "H": green (fixed at "L" in this set)
63	VSS	—	Ground terminal
64	NCO	O	Not used (open)
65	MUTE	O	Audio line muting on/off control signal output terminal "H": muting on
66	FILE	I	Input terminal to set whether custom file function is provided or not "L": none, "H": provided (Fixed at "H" in this set)
67	TEXT	I	Input terminal to set whether CD text function is provided or not "L": none, "H": provided (Fixed at "H" in this set)
68	AMP MUTE	O	Muting on/off control signal output to the power amplifier (IC611) "L": muting on
69	$\overline{\text{FLASH-W}}$	I	Internal flash memory data write mode detection signal input terminal "L": data write mode Not used (fixed at "H" in this set)
70	I2C SIO	I/O	Two-way data bus with the RDS decoder (IC51) and electrical volume (IC401)
71	I2C CKO	O	Bus clock signal output to the RDS decoder (IC51) and electrical volume (IC401)
72	RC-IN1	I	Rotary remote commander shift key input terminal "L": shift
73	X1A	O	Sub system clock output terminal (32.768 kHz)
74	X0A	I	Sub system clock input terminal (32.768 kHz)

Pin No.	Pin Name	I/O	Function
75	DAVN	I	Data transmit completed detect signal input from the RDS decoder (IC51) "H" active
76	KEYACK	I	Input of acknowledge signal for the key entry Acknowledge signal is input to accept function and eject keys in the power off status On at input of "H"
77	BU-IN	I	Battery detect signal input from the SONY bus interface (IC701) and battery detect circuit "L" is input at low voltage
78	$\overline{\text{ILL IN}}$	I	Auto dimmer control illumination line detection signal input terminal "L" is input at dimmer detection Fixed at "L" in this set
79	TEL-ATT	I	Telephone muting signal input terminal At input of "H", the signal is attenuated by –20 dB Used for the XR-C6220R only
80	$\overline{\text{NOSESW}}$	I	Front panel block remove/attach detection switch (S504) input terminal "L": front panel is attached
81	$\overline{\text{ACC IN}}$	I	Accessory detect signal input terminal "L": accessory on
82 to 85	NCO	O	Not used (open)
86	HSTX	I	Hardware standby input terminal "L": hardware standby mode Reset signal input in this set
87	MD2	I	Setting terminal for the CPU operational mode (fixed at "L" in this set)
88	MD1	I	Setting terminal for the CPU operational mode (fixed at "H" in this set)
89	MD0	I	Setting terminal for the CPU operational mode (fixed at "H" in this set)
90	$\overline{\text{RESET}}$	I	System reset signal input from the reset signal generator (IC652) and reset switch (S503) "L": reset "L" is input for several 100 msec after power on, then it changes to "H"
91	VSS	—	Ground terminal
92	X0	I	Main system clock input terminal (3.68 MHz)
93	X1	O	Main system clock output terminal (3.68 MHz)
94	VCC	—	Power supply terminal (+5V)
95 to 99	NCO	O	Not used (open)
100	9K/10K	I	AM frequency step (9 kHz or 10 kHz) selection signal input terminal "L": 9 kHz, "H": 10 kHz Not used (fixed at "H")
101	NCO	O	Not used (open)
102	NCO	I	Not used (open)
103	AMSIN	I	Whether a music is present or not from CXA2509AQ (IC301) is detected at auto music sensor "L": music is present, "H": music is not present
104	REEL	I	Rotation detect signal input from supply reel sensor and take-up reel sensor on the deck mechanism
105	POS0	I	Tape position (EJECT/FF/REW/ REV/FWD mode) detect input from the tape operation switch on the deck mechanism POS0: "L": EJECT mode, "H": others mode POS1: "L": FF and FWD mode, "H": others mode POS2: "L": REW mode, "H": others mode POS3: "L": REV and EJECT mode, "H": others mode
106	POS1	I	
107	POS2	I	
108	POS3	I	
109	LM-EJ	O	Motor drive signal output to the loading/tape operation motor drive (IC361) "H" active (For the eject direction and reverse side operation) *1
110	LM-LOD	O	Motor drive signal output to the loading/tape operation motor drive (IC361) "H" active (For the loading direction and forward side operation) *1
111	CM-ON	O	Capstan/reel motor (M901) drive signal output terminal "H": motor on
112	TAPEON	O	Tape system power supply on/off control signal output terminal "H": tape on
113	N-ROUT	O	Forward/reverse direction control signal output to the CXA2509AQ (IC301) "L": forward direction, "H": reverse direction
114	AMSON	O	Tape auto music sensor control signal output to the CXA2509AQ (IC301) "L" is output to lower the gain for audio level at FF/REW mode
115	MTLON	I/O	METAL control in/out terminal At initial mode: auto/manual mode selection input of METAL function (manual at "L" input) At manual mode: METAL on/off control signal output terminal (METAL on at "H" output) At auto mode: input at MTLIN (pin ⑩②) Used for the XR-C6220R only

Pin No.	Pin Name	I/O	Function
116	DOLON	I/O	Dolby control in/out terminal At initial mode: valid/invalid selection input of dolby function (valid at "L" input) At normal mode: dolby on/off control signal output terminal (dolby on at "H" output) Not used this function (fixed at "H")
117	TAPE MUTE	O	Tape muting on/off control signal output to the CXA2509AQ (IC301) "H": muting on Active at ATA, FF/REW mode
118	AMP ON	O	Standby on/off control signal output to the power amplifier (IC611) "L": standby mode, "H": amp on
119	VSS	—	Ground terminal
120	POWON	O	Main system power supply on/off control signal output to the BA3918 (IC671) "H": power on

*1 Loading/tape operation motor control

Terminal \ Mode	STOP	LOADING/ FORWARD	EJECT/ REVERSE	BRAKE
LM-LOD (pin ⑩)	"L"	"H"	"L"	"H"
LM-EJ (pin ⑩)	"L"	"L"	"H"	"H"