PIONEER®
The Art of Entertainment

Service Manual

ORDER NO.
RRV1372

DOLBY SURROUND AC-3 & PRO LOGIC PROCESSOR

SP-99D
SP-D07

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Type	Model		Power Requirement	The voltage can be converted by the following method.
	SP-99D	SP-D07		
KU/CA	○	—	AC120V	————
SL	—	○	AC110V/120–127V/220–230V/240V	With the voltage selector

CONTENTS

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 501 Orchard Road, #10-00 Lane Crawford Place, Singapore 0923

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE

(FOR CANADIAN MODEL ONLY)

Fuse symbols (fast operating fuse) and/or (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

Les symboles de fusible (fusible de type rapide) et/ou (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

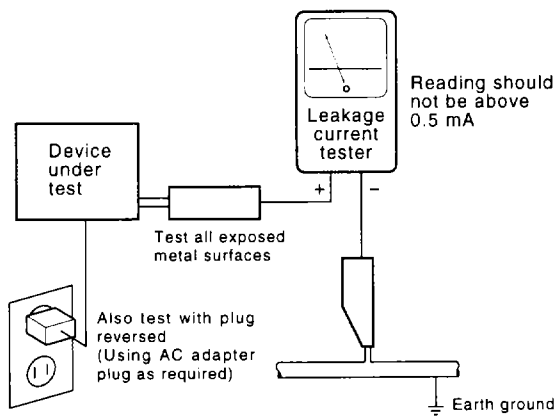
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60 Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5 mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage , etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES :

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by " ● "are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

2.1 PACKING

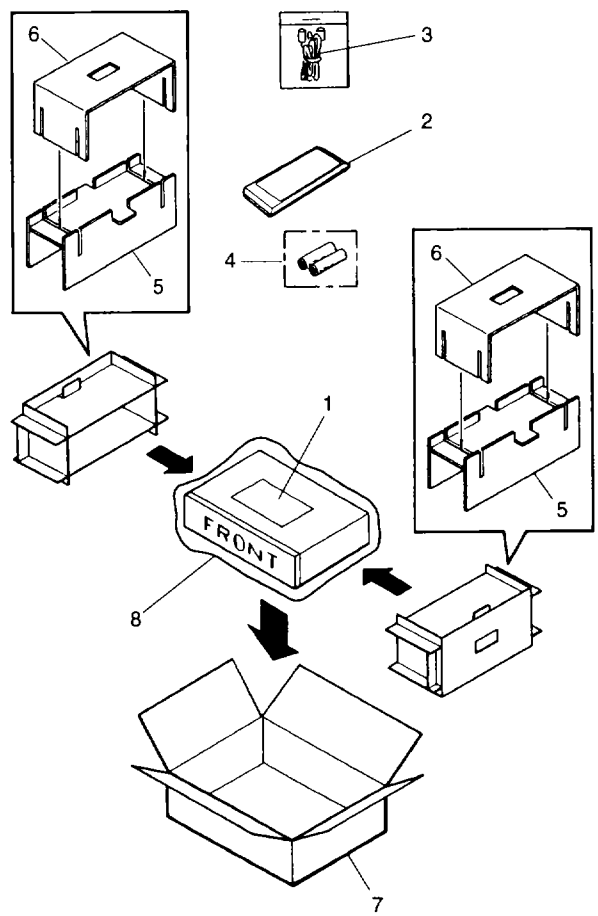
■ CONTRAST OF SP-99D/KU/CA AND SP-D07/SL

SP-99D/KU/CA and SP-D07/SL have the same construction except for the following:

Mark	No.	Description	Part No.		Remarks
			SP-99D/KU/CA	SP-D07/SL	
	1	Operating instructions (English)	ARB7052	Not used	
	1	Operating instructions (English/Chinese/Spanish)	Not used	ARE7052	
	2	Remote control unit (CU-SP004)	AXD7065	Not used	
	2	Remote control unit (CU-SP003)	Not used	AXD7066	
	5	Spacer A	AHA7077	AHA7082	
	6	Spacer B	AHA7081	AHA7083	
	7	Packing case	AHD7200	AHD7204	

■ PARTS LIST FOR SP-99D/KU/CA

Mark	No.	Description	Parts No.
	1	OPERATING INSTRUCTIONS (English)	ARB7052
	2	REMOTE CONTROL UNIT (CU-SP004)	AXD7065
	3	PLUG CORD	ADE7007
NSP	4	BATTERY (R03, AAA)	AEX-021
	5	SPACER A	AHA7077
	6	SPACER B	AHA7081
	7	PACKING CASE	AHD7200
	8	PACKING SHEET	AHG1016



2.2 EXTERIOR

■ CONTRAST OF SD-99D/KU/CA AND SP-D07/SL

SP-99D/KU/CA and SP-D07/SL have the same construction except for the following:

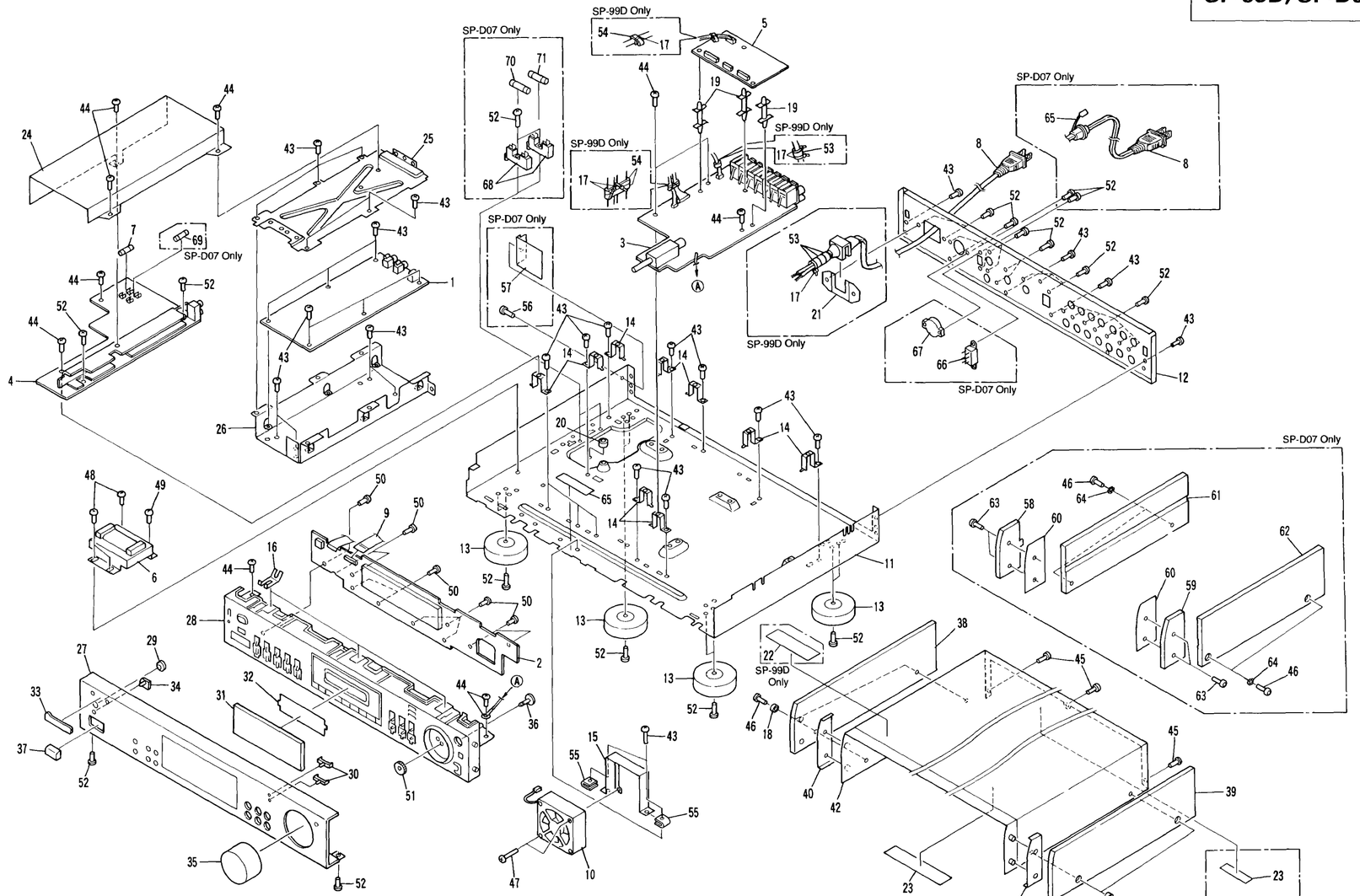
Mark	No.	Description	Part No.		Remarks
			SP-99D/KU/CA	SP-D07/SL	
⚠	6	Power transformer (AC120V)	ATT7014	Not used	
⚠	6	Power transformer (AC110V/120–127V/220–230V/240V)	Not used	ATT7013	
⚠	7	Fuse (800mA/125V, FU201)	AEK1011	Not used	
⚠	7	Fuse (T1AL250V, FU201)	Not used	AEK–508	
⚠	8	AC power cord	ADG1072	ADG1049	
NSP	11	Chassis	ANA7024	ANA7026	
	12	Rear panel	ANC7254	ANC7256	
	13	Foot (Front/Rear)	AMR1159	Not used	
	13	Isulater assy (Front/Rear)	Not used	AMR2140	
	18	Wood collor	AEC1165	Not used	
	21	AC cord spacer	ANG1153	Not used	
NSP	22	FCC label	AAX1736	Not used	
	23	65 label	ORW1069	Not used	
	27	Front panel	ANB7025	ANB7026	
	28	Panel base Assy	AMB7293	AMB7294	
	32	FL Filter	AAK7169	AAK7170	
	33	Name plate	AAM1001	VAM1051	
	35	Rotary knob M	AAB7053	AAB7055	
	36	Kin button	AAD1682	AAD2469	
	37	Power button	AAD2466	AAD2468	
	38	Side board	AMS7003	Not used	
	39	Side boaed	AMS7004	Not used	
	40	Side gold moul L	AAP7021	Notused	
	41	Side gold moul R	AAP7022	Not used	
	42	bonnet	AZN7248	AZN7249	
	46	Screw	ABA1092	ABA7010	
	53	Ferrite core (L201, L203–L205)	ATX1015	Not used	
	54	Ferrite core (L202, L206, L207)	ATX7004	Not used	
NSP	56	Rivet	Not used	AEC1352	
NSP	57	Barrier	Not used	AEE1054	
	58	Panel ST. L	Not used	AAP7018	
	59	Panel ST. R	Not used	AAP7019	
	60	Panel ST. Ruber	Not used	AAP7020	
NSP	61	Side panel L	Not used	AAH7003	
NSP	62	Side panel R	Not used	AAH7004	
	63	Screw	Not used	ABA1169	
	64	Washer	Not used	WH30FUC	
	65	Strain relief	Not used	AEC882	
⚠	66	Voltage selector (S201) (AC110–127V/220–240V)	Not used	AKX1007	
⚠	67	Voltage selector (S202) (AC110V/120–127V/220–230V/240V)	Not used	AKX1004	

Mark	No.	Description	Part No.		Remarks
			SP-99D/KU/CA	SP-D07/SL	
⚠	68	Fuse holder (H205, H206)	Not used	AKR1005	
⚠	69	Fuse (T800mAL250V, FU202)	Not used	AEK-507	
⚠	70	Fuse (T500mAL250V, FU203)	Not used	AEK-505	
⚠	71	Fuse (T400mAL250V, FU204)	Not used	AEK-504	

■ PARTS LIST FOR SP-99D/KU/CA

Mark	No.	Description	Parts No.
	1	AC-3 ASSY	AWX7017
	2	AC-3 FL ASSY	AWZ7686
	3	AC-3 VOL ASSY	AWZ7687
	4	AC-3 POWER SUPPLY ASSY	AWZ7688
	5	AC-3 SW ASSY	AWZ7689
⚠	6	POWER TRANSFORMER (T201)	ATT7014
⚠	7	FUSE (800mA/125V, FU201)	AEK1011
⚠	8	AC POWER CORD	ADG1072
	9	FLEXIBLE CABLE	ADD1128
	10	FAN MOTOR	AXM7005
NSP	11	CHASSIS	ANA7024
	12	REAR PANEL	ANC7254
	13	FOOT (FRONT/REAR)	AMR1159
NSP	14	PCB HOLDER	ANG7038
NSP	15	FAN HOLDER	ANG7039
	16	SPRING	ANK1121
	17	NYLON BINDER	AEC-093
	18	WOOD COLLOR	AEC1165
NSP	19	PCB SUPPORT	AEC7036
NSP	20	SPACER	AEC7037
	21	AC CORD SPACER	ANG1153
NSP	22	FCC LABEL	AAX1736
	23	65 LABEL	ORW1069
	24	AIR GIDE	AEE7004
	25	CASE A	ANG7035
	26	CASE B	ANG7042
	27	FRONT PANEL	ANB7025
	28	PANEL BASE ASSY	AMB7293
	29	REMOCON WINDOW	AAK2457
	30	LED LENS	AAK2459
	31	ACRYL PANEL	AAK7168
	32	FL FILTER	AAK7169
	33	NAME PLATE	AAM1001
	34	LED LENS	PNW2019
	35	ROTARY KNOB M	AAB7053

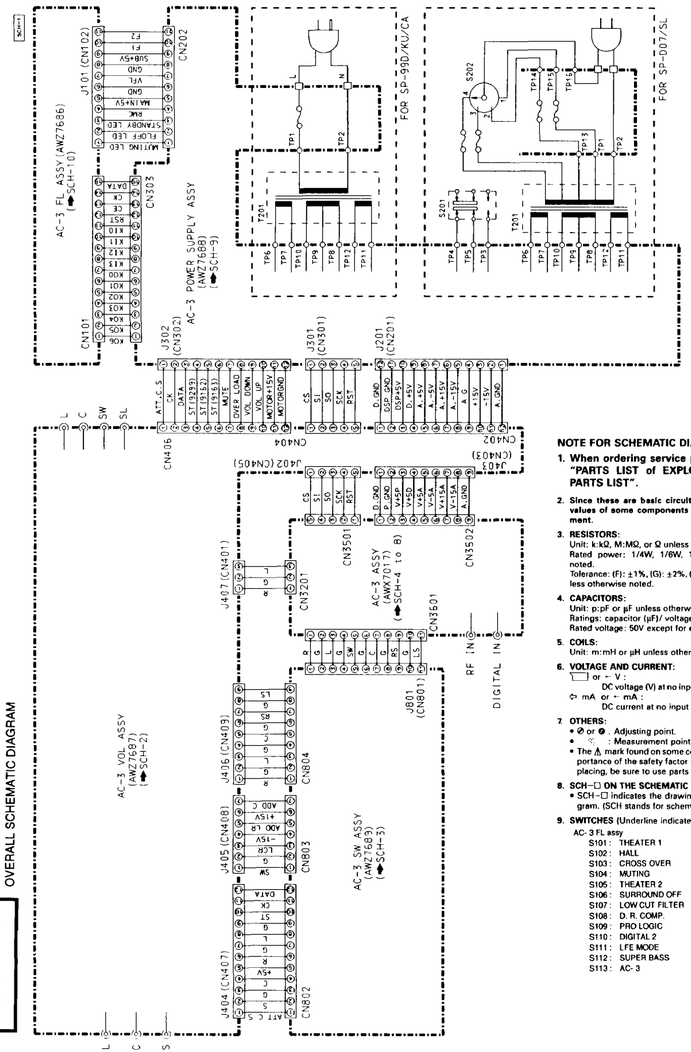
Mark	No.	Description	Parts No.
	36	KIN BUTTON	AAD1682
	37	POWER BUTTON	AAD2466
	38	SIDE BOARD	AMS7003
	39	SIDE BOARD	AMS7004
	40	SIDE GOLD MOUL L	AAP7021
	41	SIDE GOLD MOUL R	AAP7022
	42	BONNET	AZN7248
	43	SCREW	ABA1009
	44	SCREW	ABA1011
	45	SCREW	ABA1048
	46	SCREW	ABA1092
	47	SCREW	ABZ30P300FMC
	48	SCREW	BBZ40P060FCU
	49	SCREW	BBZ40P100FCU
	50	SCREW	BPZ26P080FMC
	51	NUT	NK90FUC
	52	SCREW	ABA-298
	53	FERRITE CORE (L201, L203-L205)	ATX1015
	54	FERRITE CORE (L202, L206, L207)	ATX7004
NSP	55	SPACER	AEE7006



NOTE : Screws adjacent to ▼ mark on the product are used for disassembly.

3. SCHEMATIC AND PCB CONNECTION DIAGRAMS

3. 1 OVERALL SCHEMATIC DIAGRAM



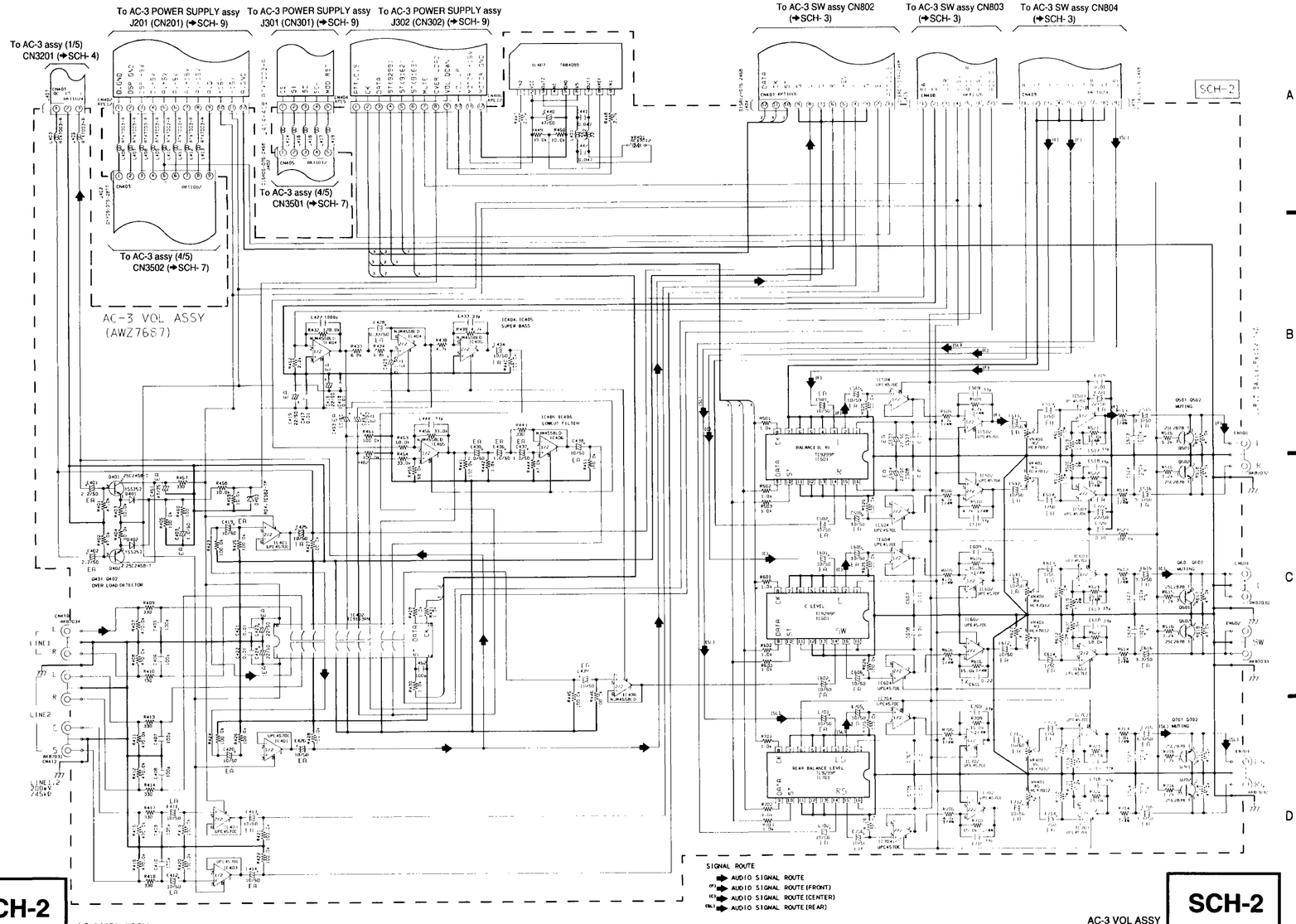
NOTE FOR SCHEMATIC DIAGRAMS (Type 2A)

1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   ▭ or ⊷ V :
   DC voltage (V) at no input signal unless otherwise noted.
   ⇨ mA or ⊷ mA :
   DC current at no input signal unless otherwise noted.
7. **OTHERS:**
   • ⊘ or ⊘ . Adjusting point.
   • ○ or □ : Measurement point.
   • The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SCH-□ ON THE SCHEMATIC DIAGRAM:**
   • SCH-□ indicates the drawing number of the schematic diagram. (SCH stands for schematic diagram.)
9. **SWITCHES** (Underline indicates switch position):

AC-3 FL assy

S101 :	THEATER 1	S114 :	DIGITAL 1
S102 :	HALL	S115 :	FRONT MODE
S103 :	CROSS OVER	S116 :	SUB WOOFER MODE
S104 :	MUTING	S117 :	ATT
S105 :	THEATER 2	S118 :	AC-3 RF
S106 :	SURROUND OFF	S119 :	CENTER MODE
S107 :	LOW CUT FILTER	S120 :	TEST TONE
S108 :	D. R. COMP.	S121 :	LINE 2
S109 :	PRO LOGIC	S122 :	POWER
S110 :	DIGITAL 2	S123 :	REAR MODE
S111 :	LFE MODE	S124 :	DISPLAY OFF
S112 :	SUPER BASS	S125 :	LINE 1
S113 :	AC- 3		

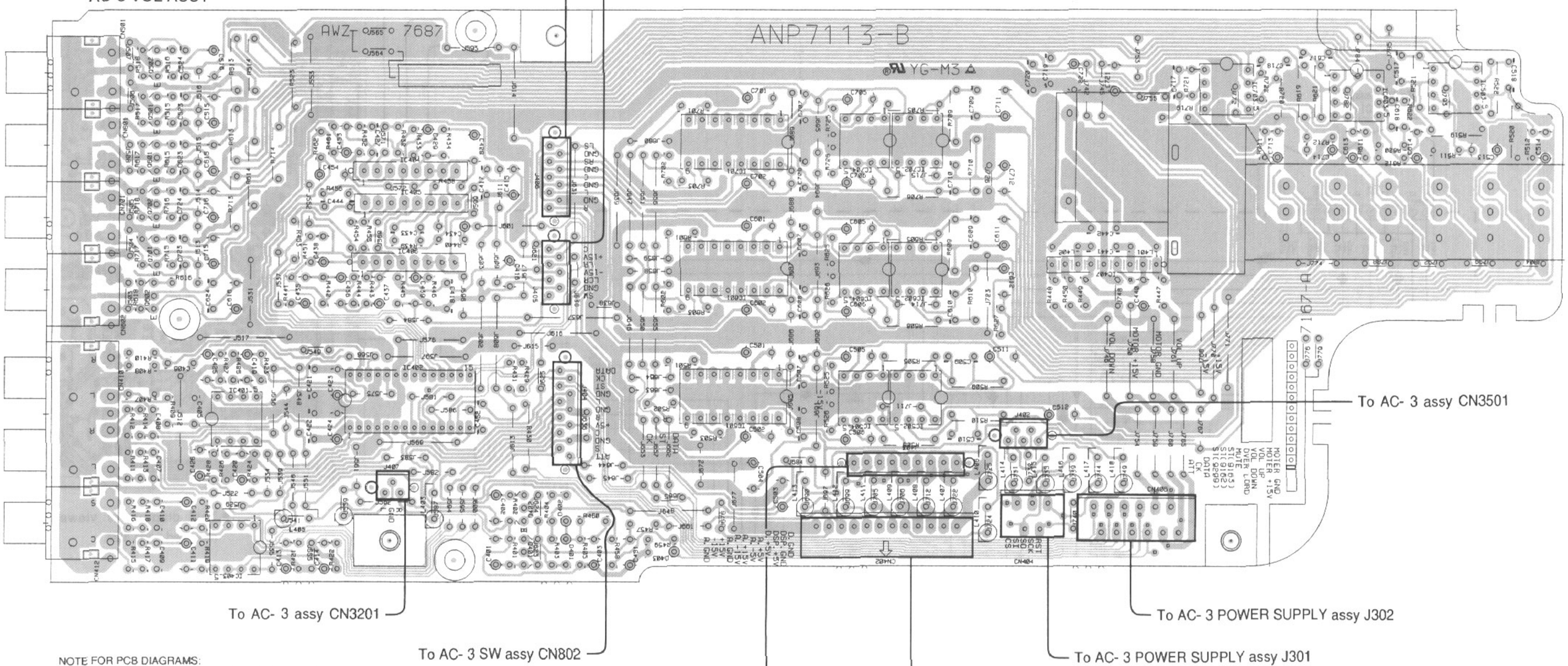
3. 2 AC-3 VOL ASSY



PCB – 1

Q601 Q501 Q502
Q602 Q701 Q702
IC401 IC403
IC404–IC406
IC402
Q401 Q402
IC701
IC601
IC501
IC704 IC702
IC604 IC602
IC504 IC502
IC407
IC705
IC603
IC503
VR401

AC-3 VOL ASSY



NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3- terminal regulator

NOTE FOR PCB DIAGRAMS:

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

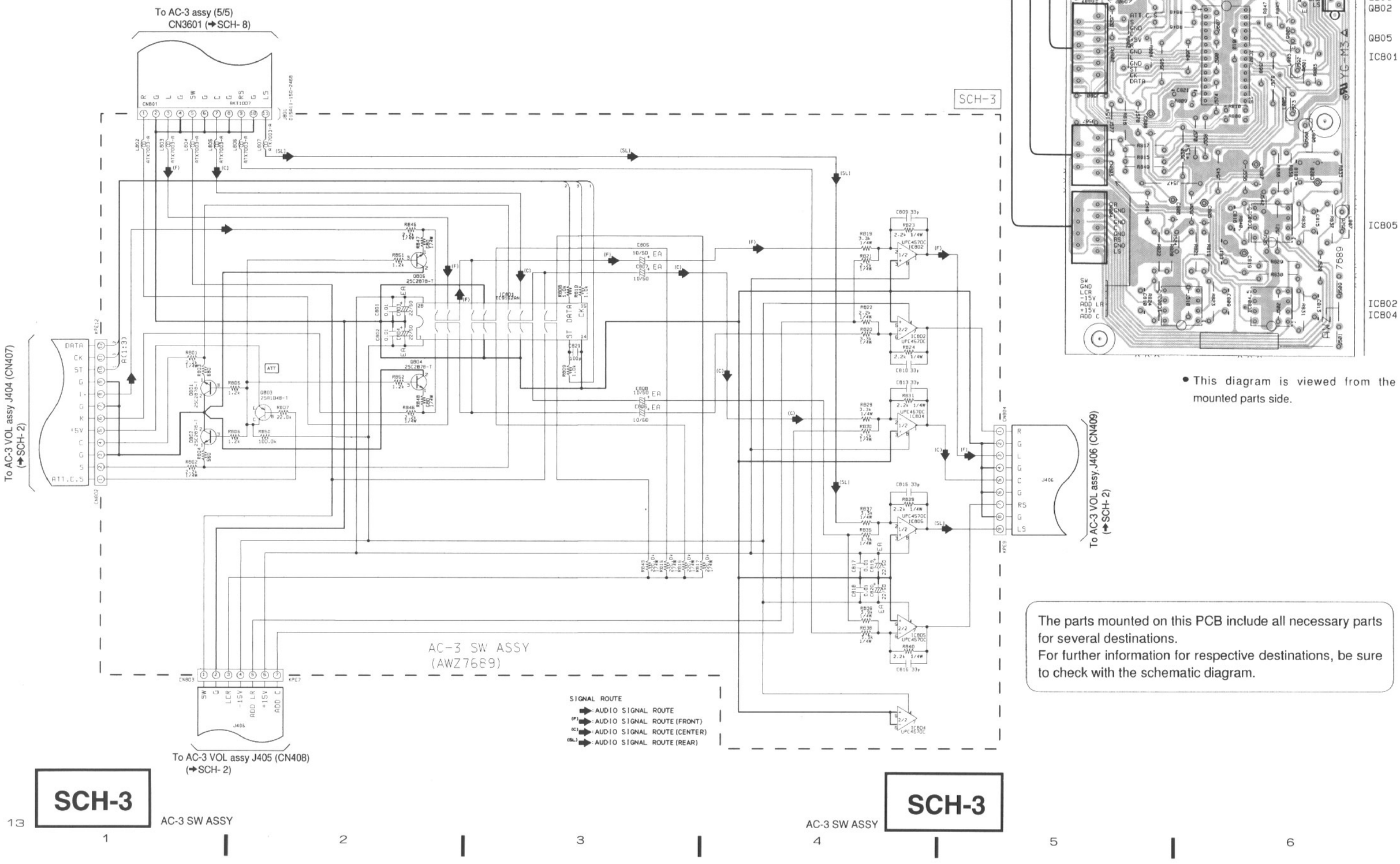
Symbol in PCB Diagrams	Symbol in Schematic Diagrams	Part Name
Q504 E Q504	Q504 Q504	Transistor
D203 D203	D203	Diode
C513 C513	C513	Capacitor (Polarized)

3. The transistor terminal marked with E or ⊏ shows the emitter.
4. The diode terminal marked with ⊖ or ⊐ shows cathode side.
5. The capacitor terminal marked with ⊖ or ⊏ shows negative terminal.

• This diagram is viewed from the mounted parts side.

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

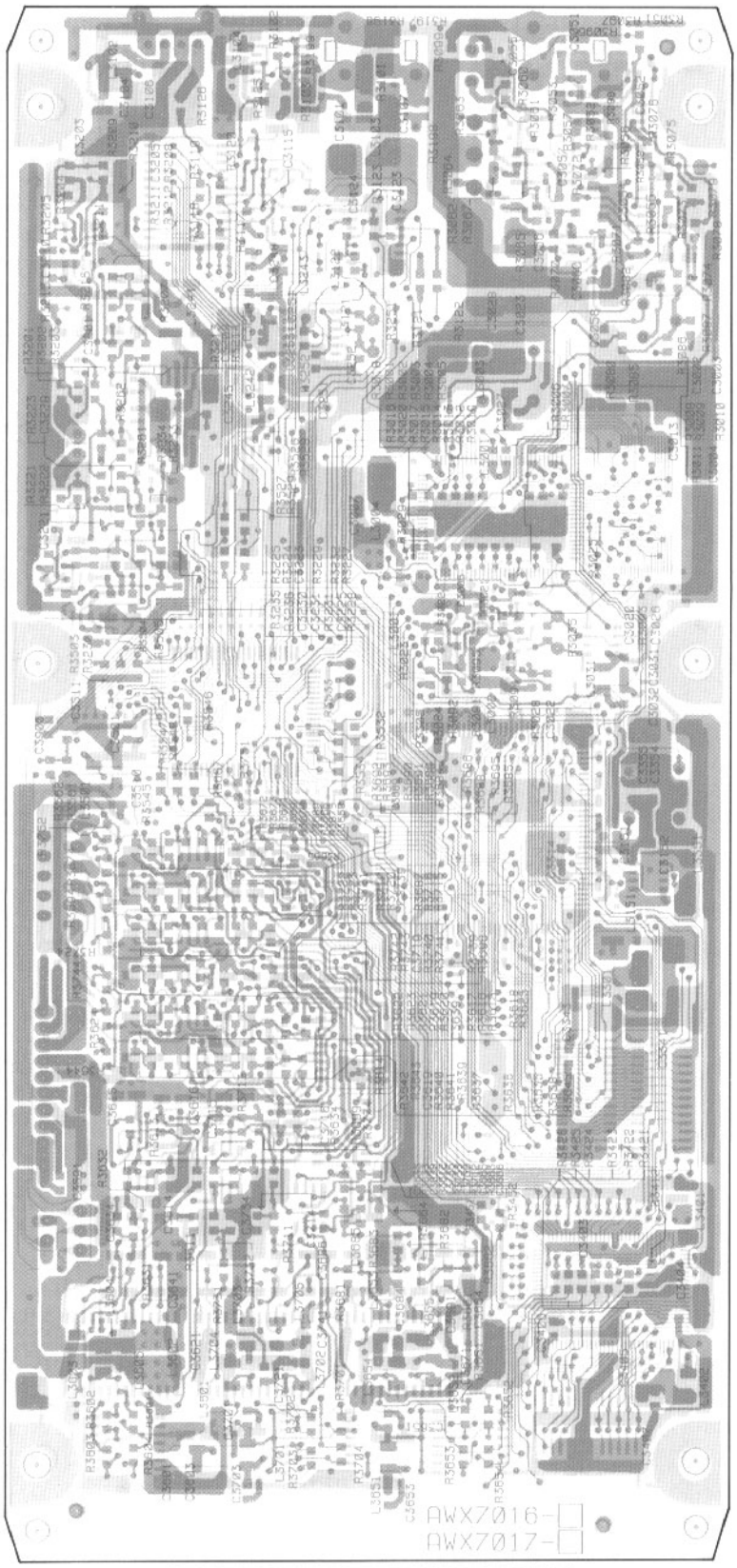
3. 3 AC-3 SW ASSY



- This diagram is viewed from the mounted parts side.

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

- This diagram is viewed from the gray colored foil side.
- This is a multi-layer PCB.
  But information for both sides is shown.



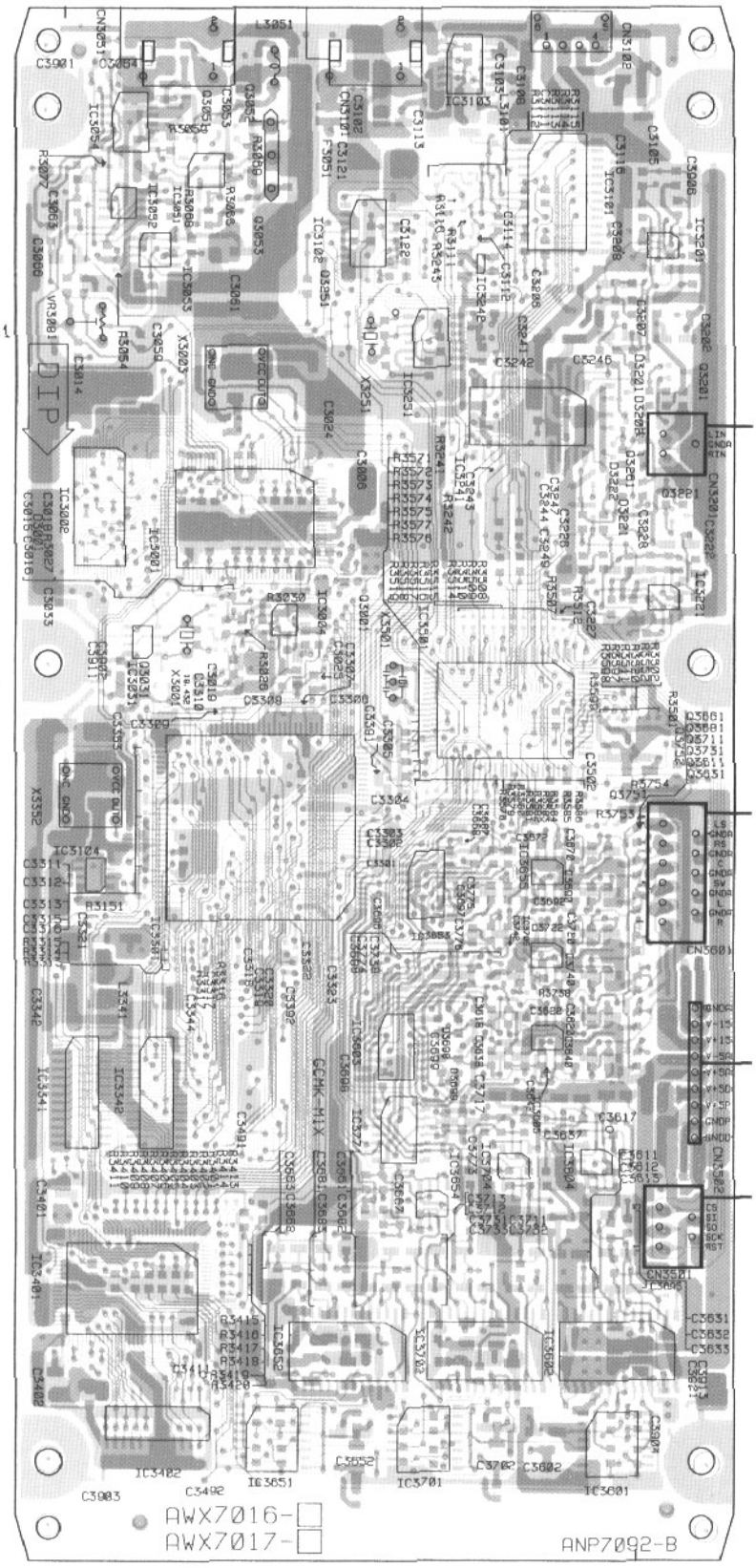
The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

PCB – 3

3. 4 AC-3 ASSY

- This diagram is viewed from the pink colored foil side.
- This is a multi-layer PCB.
  But information for both sides is shown.

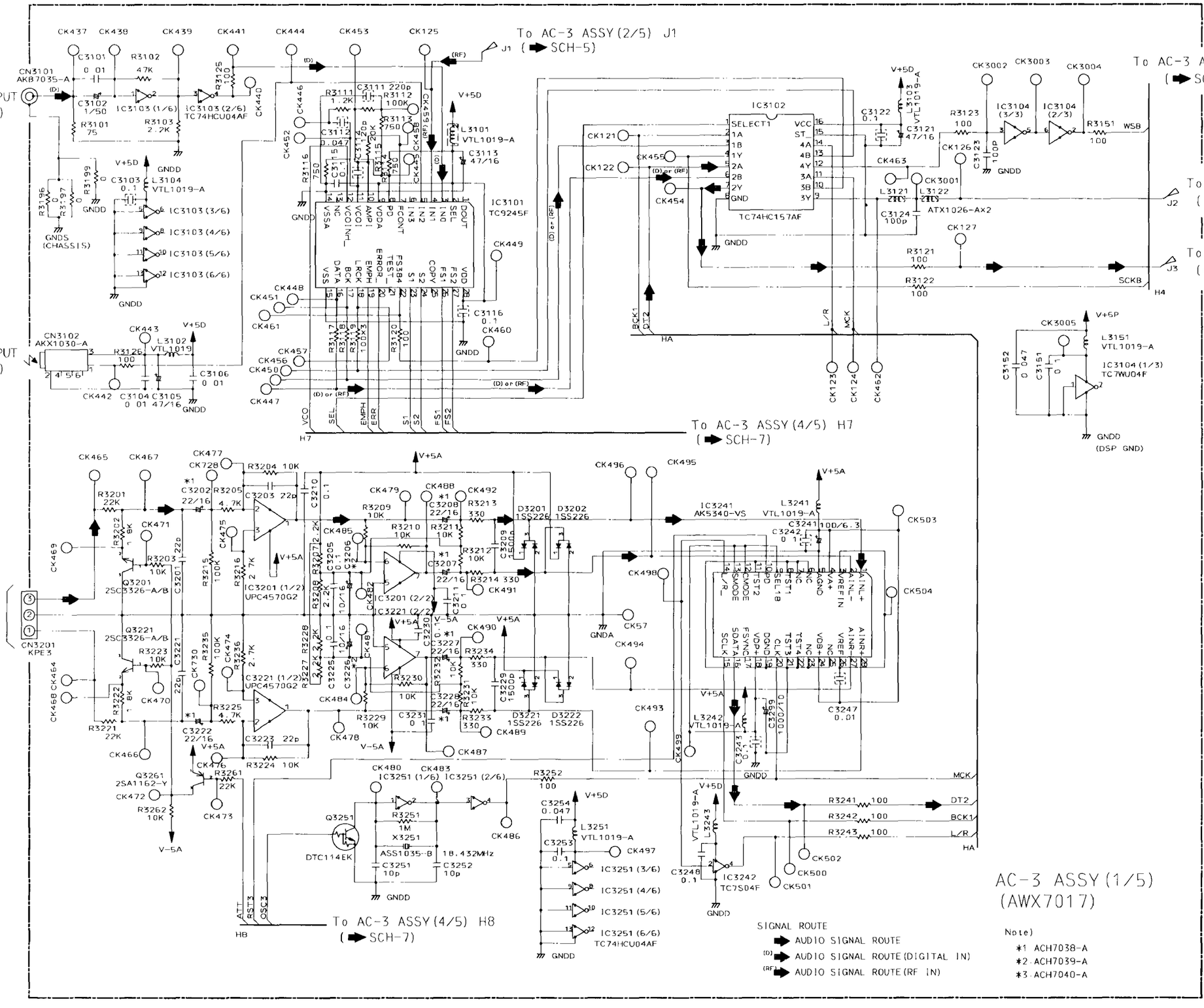
AC-3 ASSY



IC3103
Q3052
Q3051
IC3054
IC3051
IC3052 IC3101
IC3102
IC3053 Q3053 IC3201
IC3242
Q3251
IC3251
Q3201
IC3241
Q3261
IC3002 Q3221
IC3001
Q3001 IC3221
IC3004
IC3031
Q3031
Q3661
IC3501 Q3681
Q3711
Q3731
Q3611
Q3752
IC3301 Q3631
Q3751
IC3104 IC3655
IC3653
IC3705
IC3603 IC3605
IC3341
IC3342
IC3771
IC3604
IC3704
IC3654
IC3401
IC3702
IC3652 IC3602
IC3402
IC3701 IC3601
IC3651

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

● AC-3 ASSY (1/5)
DIR, A/D BLOCK

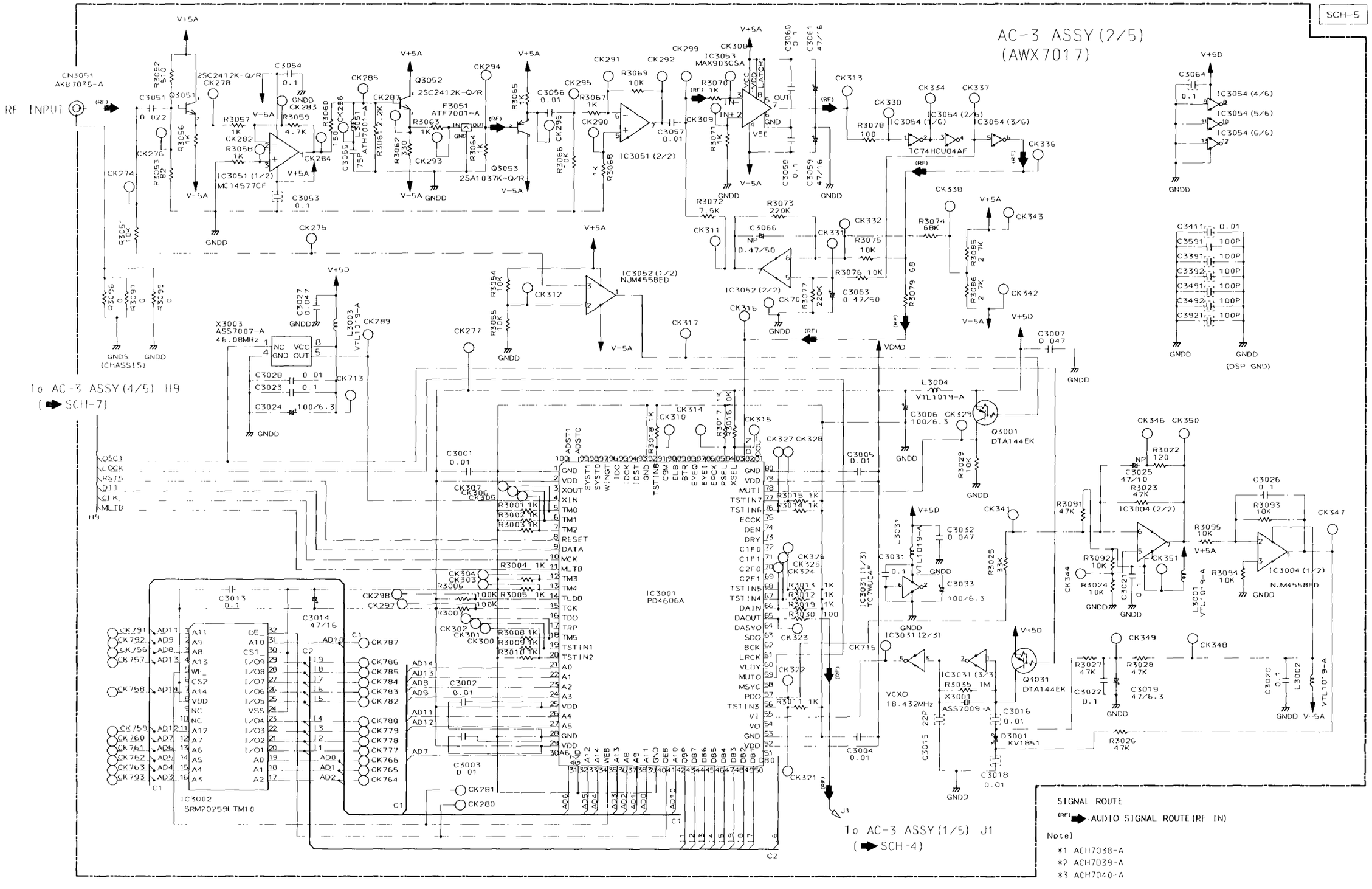


AC-3 ASSY (1/5)
(AWX7017)

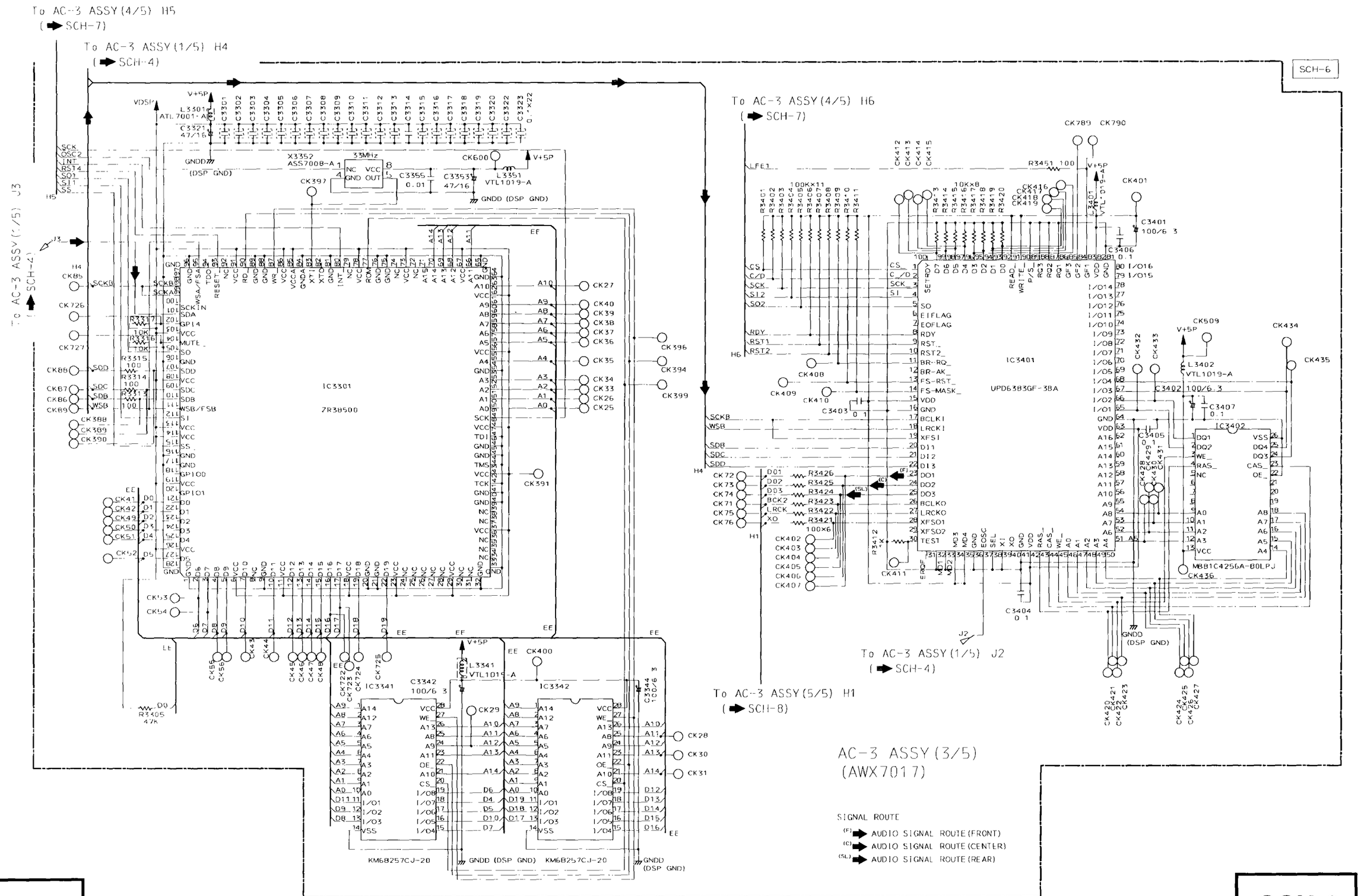
SCH-4

AC-3 ASSY (1/5)

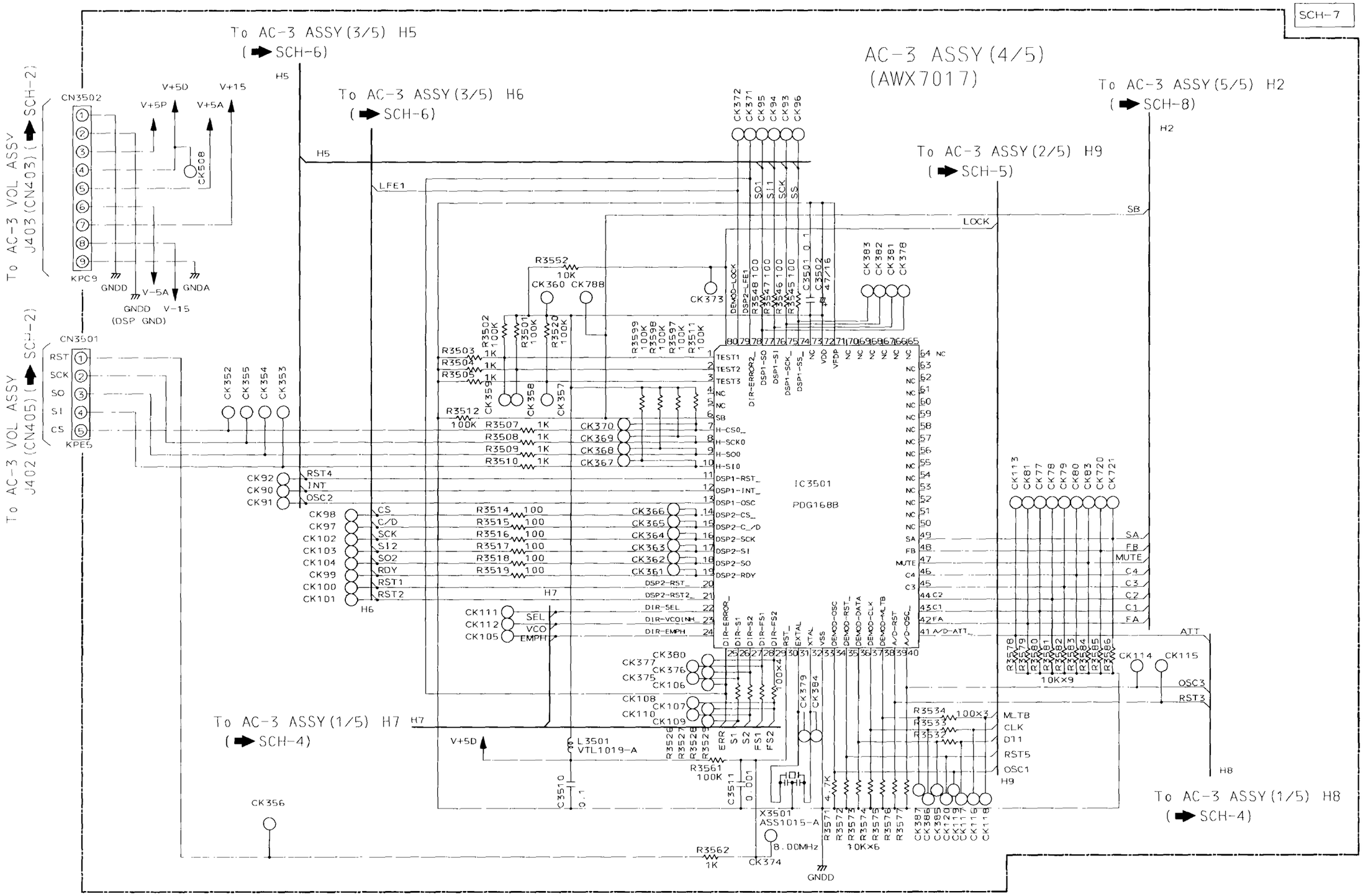
● AC-3 ASSY (2/5) DEMODULATOR BLOCK



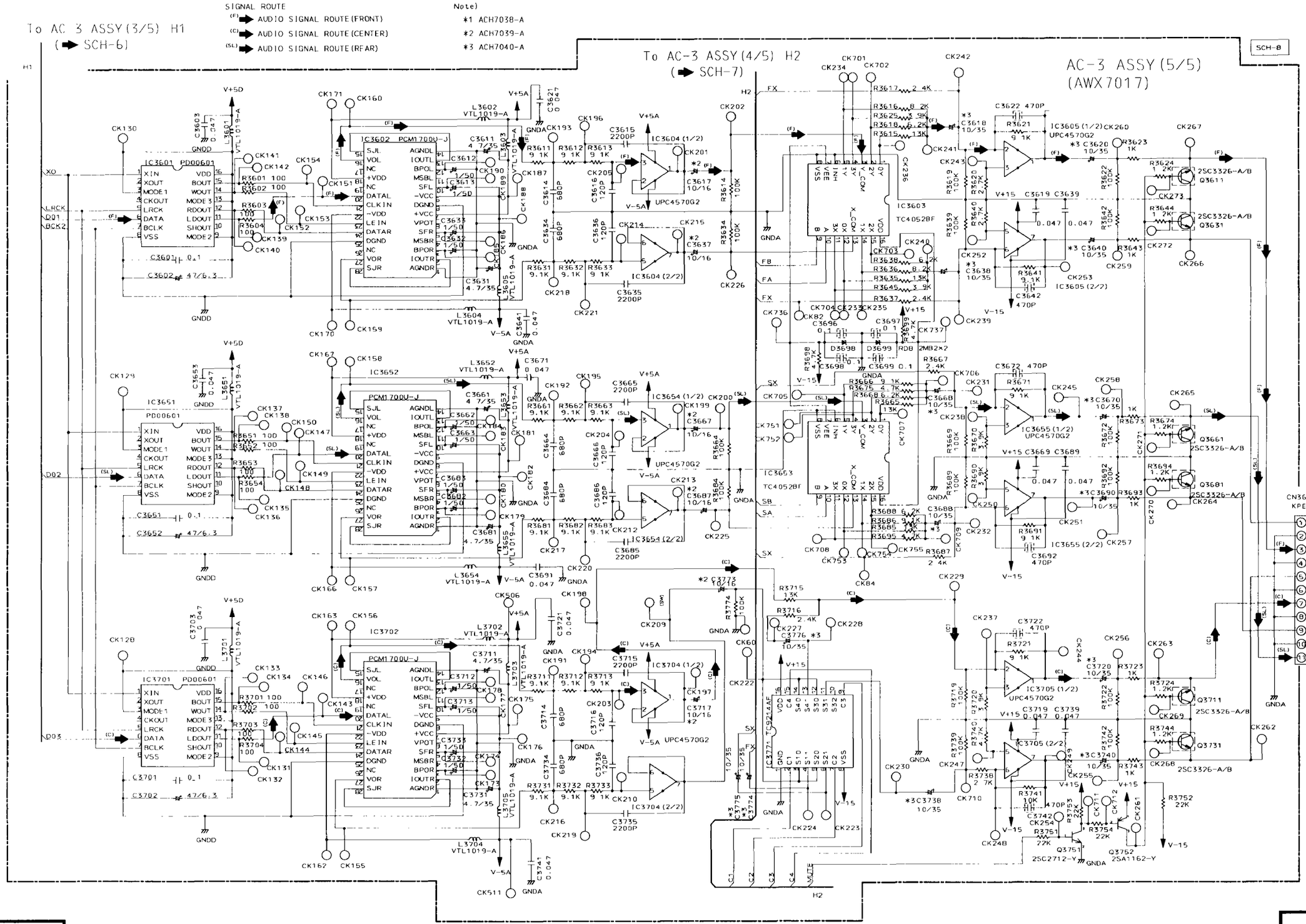
● AC-3 ASSY (3/5)
DSP BLOCK



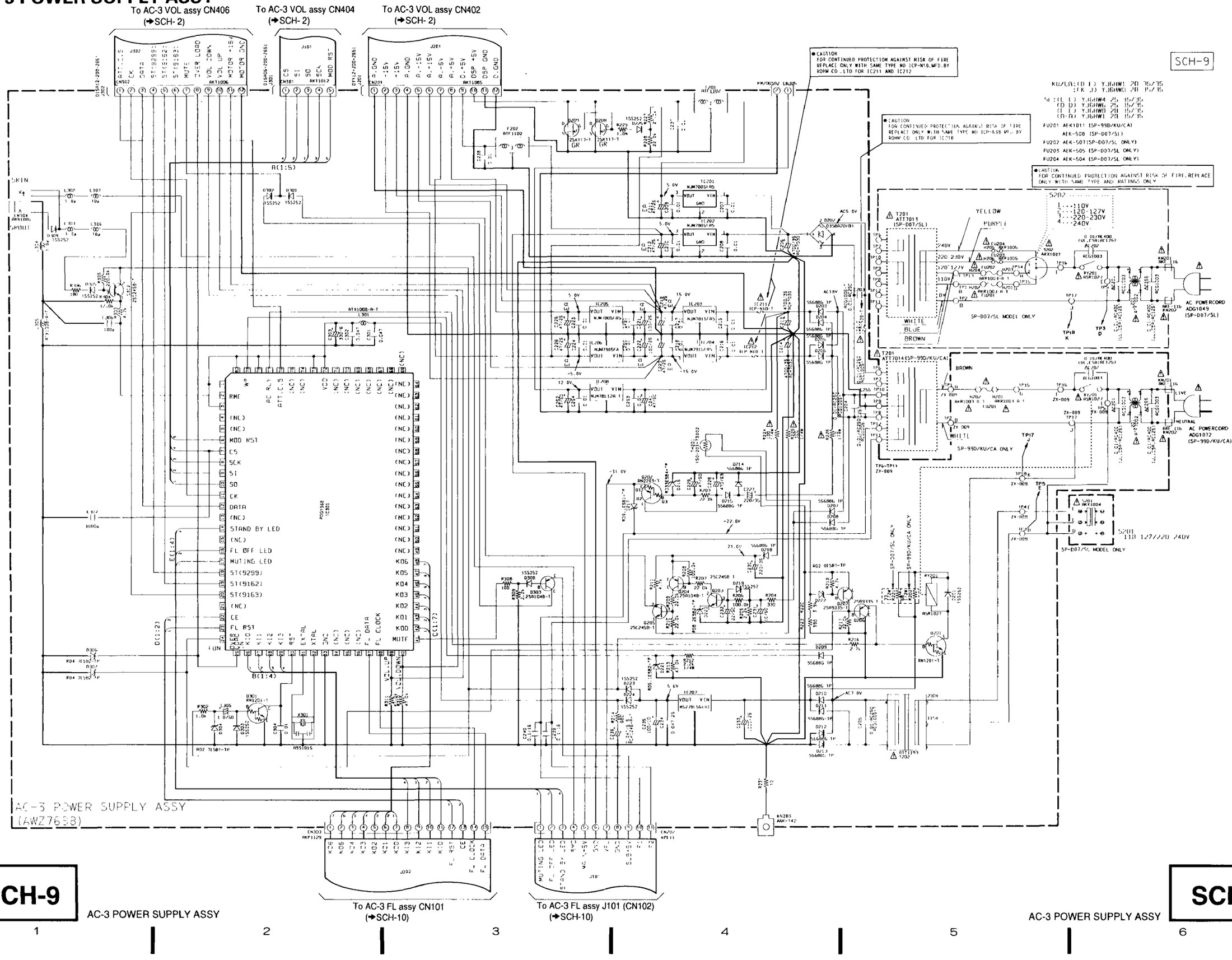
● AC-3 ASSY (4/5) UCOM BLOCK



● AC-3 ASSY (5/5)
D/A BLOCK



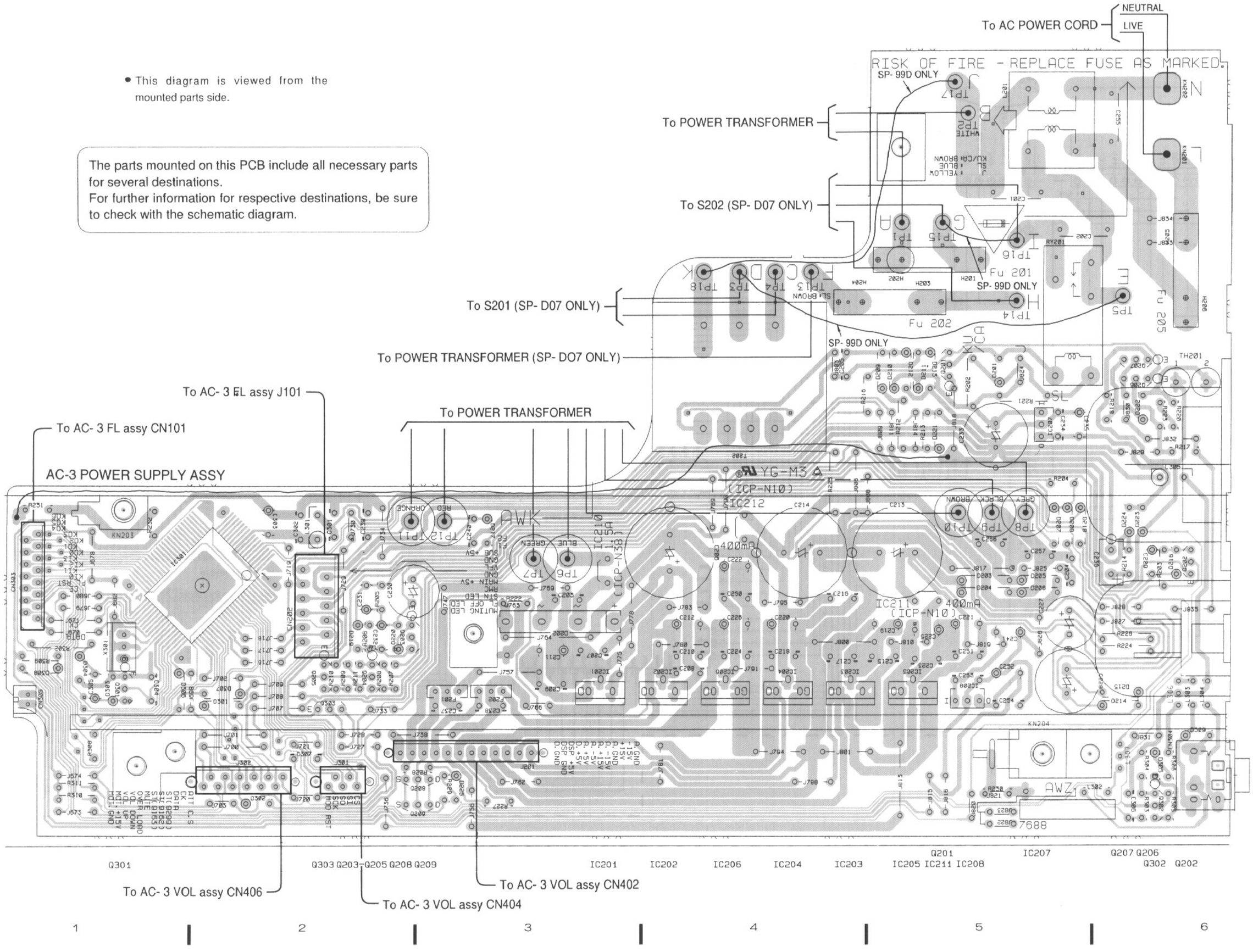
3. 5 AC-3 POWER SUPPLY ASSY



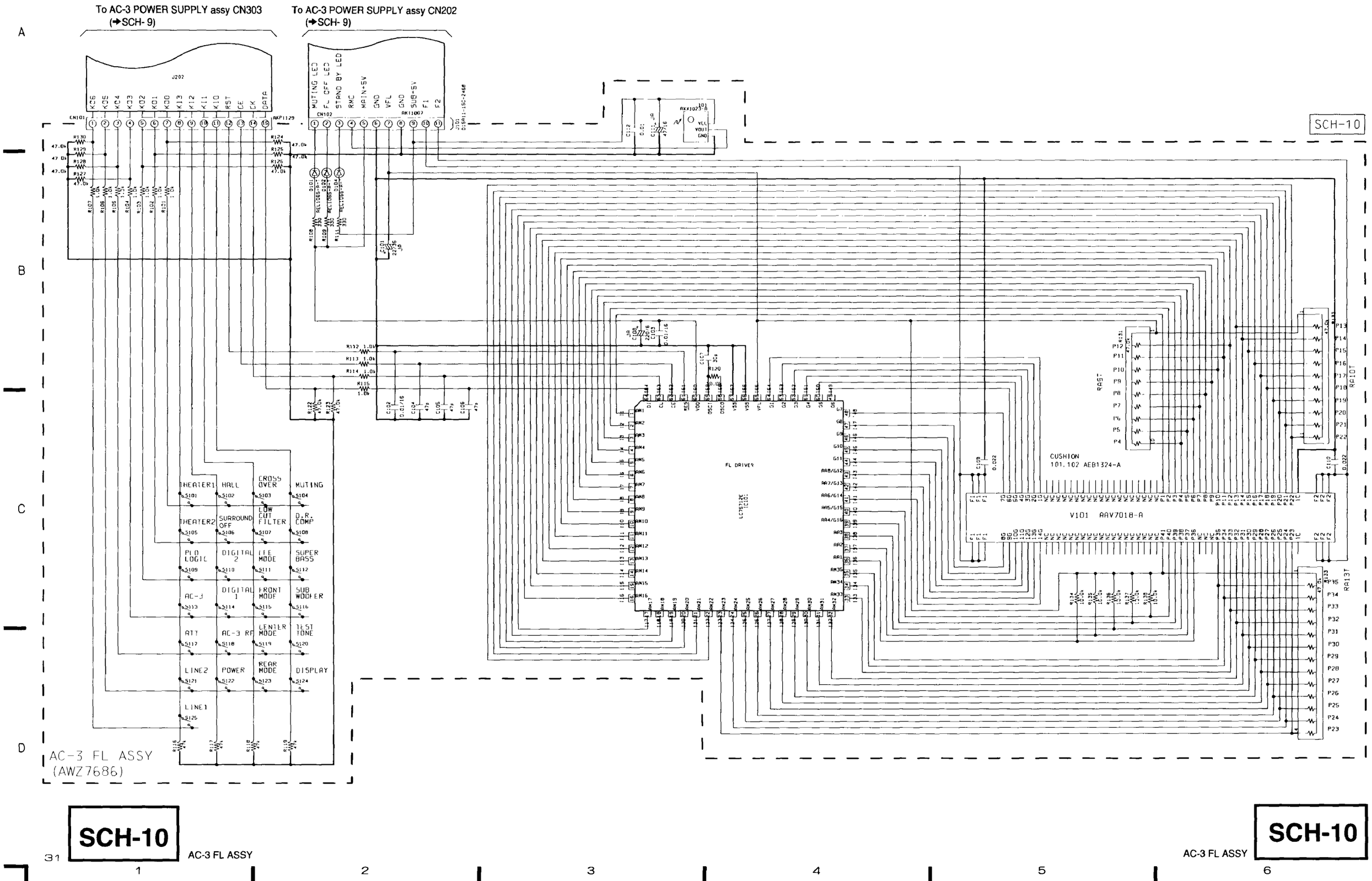
SCH-9 AC-3 POWER SUPPLY ASSY

• This diagram is viewed from the mounted parts side.

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.



3. 6 AC-3 FL ASSY

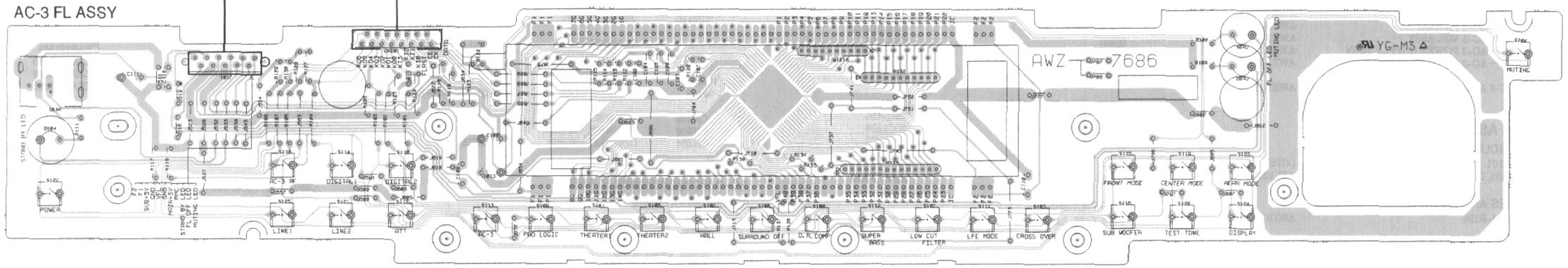


SCH-10 AC-3 FL ASSY

To AC- 3 POWER SUPPLY assy CN202

To AC- 3 POWER SUPPLY assy CN303

AC-3 FL ASSY



• This diagram is viewed from the mounted parts side.

The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.

4. PCB PARTS LIST

NOTES :

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "●" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω → 56 x 10¹ = 561 ..... RD1/8PM 5 6 1 J
47kΩ → 47 x 10³ = 473 ..... RD1/4PS 4 7 3 J
0.5Ω → 0R5 ..... RN2H 0 R 5 K
1Ω → 010 ..... RS1P 0 1 0 K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ → 562 x 10¹ = 5621 ..... RM1/4PC 5 6 2 1 F

Mark	No.	Description	Parts No.
LIST OF PCB ASSEMBLIES			
NSP	AC-3 COMPLEX ASSY		AWK7167
	├ AC-3 FL ASSY		AWZ7686
	├ AC-3 VOL ASSY		AWZ7687
	├ AC-3 POWER SUPPLY ASSY		AWZ7688
	└ AC-3 SW ASSY		AWZ7689
	AC-3 ASSY		AWX7017
AC-3 FL ASSY			
SEMICONDUCTORS			
	IC101		LC75712E
	D101, D102, D104		AEL1065
SWITCHES AND RELAYS			
	S101–S125		ASG1034
CAPACITORS			
	C107		CCPUSL300J50
	C104–C106		CCPUSL470J50
	C101		CEJA220M35
	C108		CEJA221M6
	C111		CEJA470M16
	C112		CKCYF103Z50
	C109, C110		CKCYF223Z50
	C103		CKPUYY103M16
	C102		CKPUYY103N16
RESISTORS			
	R132		RA10T473J
	R133		RA13T473J
	R131		RA9T473J
	Other Resistors		RD1/8PM□□□J
OTHERS			
	V101	FL TUBE	AAV7018
	CN101	15P SOCKET	AKP1129
		CABLE HOLDER	AKT1007
		REMOTE RECEIVER UNIT	AXX1023

Mark	No.	Description	Parts No.
AC-3 VOL ASSY			
SEMICONDUCTORS			
	IC404–IC406		NJM4558LD
	IC407		TA8409S
	IC402		TC9163AN
	IC501, IC601, IC701		TC9299P
	IC401, IC403, IC502–IC504		UPC4570C
	IC602–IC604, IC702–IC704		UPC4570C
	Q401, Q402		2SC2458
	Q501, Q502, Q601, Q602		2SC2878
	Q701, Q702		2SC2878
	D401, D402		1SS252
	D403		RD4.7ESB2
COILS AND FILTERS			
	L403, L405–L418		ATX7003
	L401, L402		LAU220J
CAPACITORS			
	C452		CCCCH101J50
	C433, C444, C509, C510		CCCCH330J50
	C517, C518, C609, C617, C618		CCCCH330J50
	C709, C710, C717, C718		CCCCH330J50
	C440		CEAS470M50
	C403, C435–C437, C513, C514		CEEA010M50
	C613, C614, C713, C714		CEEA010M50
	C429		CEEA0R1M50
	C411–C414, C419, C420		CEEA100M50
	C425, C426, C434, C438, C439		CEEA100M50
	C453, C454, C501, C502		CEEA100M50
	C505, C506, C511, C512		CEEA100M50
	C601, C602, C605, C606		CEEA100M50
	C611, C612, C701, C702		CEEA100M50
	C705, C706, C711, C712		CEEA100M50
	C415, C416, C423, C424		CEEA220M50
	C503, C504, C721, C722		CEEA220M50
	C401, C402		CEEA2R2M50
	C515, C516, C615, C616		CEEA3R3M50
	C715, C716		CEEA3R3M50
	C451		CEEA470M25
	C428		CEEAR33M50
	C523, C524, C623, C624		CFTXA102J50
	C723, C724		CFTXA102J50
	C610		CFTXA224J50

Mark	No.	Description	Parts No.
	C427		CKCYB102K50
	C417, C418, C421, C422		CKCYF103Z50
	C507, C508, C607, C608		CKCYF103Z50
	C707, C708, C719, C720		CKCYF103Z50
	C441, C442		CKCYF473Z50
	C405–C410		CKPUYB101K50
	RESISTORS		
	VR401		ACX7012
	R513, R514, R613, R614		RDR1/4PM102J
	R713, R714		RDR1/4PM102J
	R519, R520, R619		RDR1/4PM122J
	R521, R522, R609, R610, R621		RDR1/4PM153J
	R709, R710		RDR1/4PM153J
	R505, R506, R509, R510		RDR1/4PM472J
	R605, R606, R705, R706		RDR1/4PM472J
	Other Resistors		RD1/8PM□□□J
	OTHERS		
	CN601	2P PIN JACK	AKB7030
	CN412	2P PIN JACK	AKB7031
	CN501, CN701	2P PIN JACK	AKB7032
	CN602	2P PIN JACK	AKB7033
	CN410	PIN JACK (4P)	AKB7034
		CABLE HOLDER	AKT1012
		CABLE HOLDER	AKT1023
		CABLE HOLDER (9P)	AKT1082
	J402	JUMPER WIRE	D15A05–075–2468
	J406	JUMPER WIRE	D15A09–075–2468
	CN402	CONNECTOR (12P)	KPC12
	CN406	CONNECTOR (12P)	KPE12
	CN404	CONNECTOR (5P)	KPE5

AC–3 POWER SUPPLY ASSY

SEMICONDUCTORS

Mark			
⚠	IC211, IC212		ICP–N10
⚠	IC210		ICP–N38
	IC207		M5278L56 (A)
	IC201, IC202, IC205		NJM7805FAS
	IC203		NJM7815FAS
	IC208		NJM78L12A
	IC206		NJM7905FA
	IC204		NJM7915FAS
	IC301		PDG156B
	Q204, Q303		2SA1048
	Q206, Q207		2SA933S
	Q203, Q205, Q302		2SC2458
	Q208, Q209		2SK117
	Q201, Q301		RN1201
	Q202		RN2203
	D201, D219, D223–D225		1SS252
	D301–D303, D305, D308, D309		1SS252
	D202		D3SBA20 (B)
	D222		RD2.0ESB1
	D304		RD2.7ESB1
	D216		RD33ESB4
	D306, D307		RD4.7ESB2
	D221		RD5.1ESB2
	D220		RD8.2ESB2
	D217		RD9.1ESB1
	D203–D215, D218		S5688G
	TH201		150–203–73002

Mark	No.	Description	Parts No.
	COILS AND FILTERS		
	F201, F202		ATF1102
⚠	L201		ATF7002
	L301, L305		ATX1008
	L302–L304		LAU010J
	L306, L307		LAU100J
	TRANSFORMERS		
⚠	T202		ATT1193
	SWITCHES AND RELAYS		
	RY201		ASR1027
	CAPACITORS		
⚠	C201, C202, C255 (0.01 μ F/400V)		ACG1003
	C203–C205, C256, C257 (0.01 μ F/150V)		ACG1005
	C236 (6.8 μ F/25V)		ACH1246
	C206, C213, C214 (4700 μ F/35V)		ACH7030
	C306		CCCCH101J50
	C305		CEAS010M50
	C231		CEAS100M50
	C235		CEAS101M10
	C233		CEAS102M25
	C232		CEAS220M50
	C227, C230		CEAS221M35
	C303		CEAS331M6
	C229, C241, C252		CEAS470M50
	C228		CEAS471M63
	C221, C222		CEEA101M25
	C211, C212, C219, C220		CEEA470M25
	C225, C226		CEEA470M25
	C307		CKCYF102Z50
	C207–C210, C215–C218		CKCYF103Z50
	C223, C224, C237, C238		CKCYF103Z50
	C250, C251, C253, C254, C304		CKCYF103Z50
	C301, C302		CKCYF473Z50
	C239, C240		CKCYX104M16
	C234		CKCYX473M25
	RESISTORS		
	R221		RD1/2PM330J
	R202		RD1/2PM680J
	R212		RD1/4PM222J
⚠	R226		RFA1/4PS100J
⚠	R224, R225		RFA1/4PS101J
	Other Resistors		RD1/8PM□□□J
	OTHERS		
		SCREW	ABA–298
	CN304	JACK	AKN1006
	CN303	15P SOCKET	AKP1129
	H201–H204	FUSE CLIP	AKR1003
		CABLE HOLDER	AKT1012
		CABLE HOLDER (12P)	AKT1085
		HEAT SINK	ANH7022
	X301	CERAMIC RESONATOR (8.00 MHz)	ASS1015
		SCREW	BBZ30P080FMC
	CN202	CONNECTOR (11P)	KPE11

AC–3 SW ASSY

SEMICONDUCTORS

	IC801	TC9162AN
	IC802, IC804, IC805	UPC4570C
	Q803	2SA1048
	Q801, Q802, Q804, Q805	2SC2878

Mark	No.	Description	Parts No.
COILS AND FILTERS			
	L802–L807		ATX7003
CAPACITORS			
	C821		CCCCH101J50
	C809, C810, C813, C815, C816		CCCCH330J50
	C805–C808		CEEA100M50
	C803, C804, C819, C820		CEEA220M50
	C801, C802, C817, C818		CKCYF103Z50
RESISTORS			
	R801, R802, R821–R824		RDR1/4PM222J
	R830, R831, R839, R840		RDR1/4PM222J
	R845, R846		RDR1/4PM222J
	R815–R817, R849		RDR1/4PM224J
	R819, R820, R829, R837, R838		RDR1/4PM332J
	R835, R836		RDR1/4PM392J
	R847, R848		RDR1/4PM681J
	Other Resistors		RD1/8PM□□□J
OTHERS			
		CABLE HOLDER	AKT1007
	CN802	CONNECTOR (12P)	KPE12
	CN803	CONNECTOR (7P)	KPE7
	CN804	CONNECTOR (9P)	KPE9

AC-3 ASSY

Mark	No.	Description	Parts No.
SEMICONDUCTORS			
	IC3241		AK5340-VS
	IC3341, IC3342		KM68257CJ-20
	IC3053		MAX903CSA
	IC3402		MB81C4256A-80LPJ
	IC3051		MC14577CF
	IC3004, IC3052		NJM4558ED
	IC3602, IC3652, IC3702		PCM1700U-J
	IC3601, IC3651, IC3701		PD00601
	IC3001		PD4606A
	IC3501		PDG168B
	IC3002		SRM20259LTM10
	IC3603, IC3653		TC4052BF
	IC3102		TC74HC157AF
	IC3054, IC3103, IC3251		TC74HCU04AF
	IC3242		TC7S04F
	IC3031, IC3104		TC7WU04F
	IC3771		TC9214AF
	IC3101		TC9245F
	IC3201, IC3221, IC3604, IC3605		UPC4570G2
	IC3654, IC3655, IC3704, IC3705		UPC4570G2
	IC3401		UPD6383GF-3BA
	IC3301		ZR38500
	Q3053		2SA1037K
	Q3261, Q3752		2SA1162
	Q3051, Q3052		2SC2412K
	Q3751		2SC2712
	Q3201, Q3221, Q3611, Q3631, Q3661		2SC3326
	Q3681, Q3711, Q3731		2SC3326
	Q3001, Q3031		DTA144EK
	Q3251		DTC114EK
	D3201, D3202, D3221, D3222		1SS226
	D3001		KV1851
	D3698, D3699		RD8.2MB2

Mark	No.	Description	Parts No.
COILS AND FILTERS			
	F3051 (2.88MHz)		ATF7001
	L3051 (68 μH)		ATH7001
	L3301		ATL7001
	L3121, L3122		ATX1026
	L3001–L3004, L3031, L3101–L3104		VTL1019
	L3151, L3241–L3243, L3251, L3341		VTL1019
	L3351, L3401, L3402, L3501		VTL1019
	L3601–L3605, L3651–L3655		VTL1019
	L3701–L3705		VTL1019
CAPACITORS			
	C3202, C3207, C3208, C3222 (22 μF/16V)		ACH7038
	C3227, C3228 (22 μF/16V)		ACH7038
	C3206, C3226, C3617, C3637, C3667 (10 μF/16V)		ACH7039
	C3687, C3717, C3773 (10 μF/16V)		ACH7039
	C3618, C3620, C3638, C3640, C3668 (10 μF/35V)		ACH7040
	C3670, C3688, C3690, C3720, C3738 (10 μF/35V)		ACH7040
	C3740, C3774–C3776 (10 μF/35V)		ACH7040
	C3251, C3252		CCSQCH100D50
	C3123, C3124, C3591		CCSQCH101J50
	C3616, C3636, C3666, C3686, C3716		CCSQCH121J50
	C3736		CCSQCH121J50
	C3201, C3203, C3221, C3223		CCSQCH220J50
	C3614, C3634, C3664, C3684, C3714		CCSQCH681J50
	C3734		CCSQCH681J50
	C3055		CCSQCH750J50
	C3391, C3392, C3491, C3492, C3921		CCSRCH101J50
	C3114		CCSRCH121J50
	C3015		CCSRCH220J50
	C3111		CCSRCH221J50
	C3622, C3642, C3672, C3692, C3722		CCSRCH471J50
	C3742		CCSRCH471J50
	C3299		CEAS102M10
	C3102, C3612, C3613, C3632, C3633		CEV010M50
	C3662, C3663, C3682, C3683		CEV010M50
	C3712, C3713, C3732, C3733		CEV010M50
	C3006, C3024, C3033, C3241, C3342		CEV101M6
	C3344, C3401, C3402		CEV101M6
	C3014, C3059, C3061, C3105, C3113		CEV470M16
	C3121, C3321, C3353, C3502		CEV470M16
	C3019, C3602, C3652, C3702		CEV470M6
	C3611, C3631, C3661, C3681, C3711		CEV4R7M35
	C3731		CEV4R7M35
	C3025		CEVNP470M10
	C3066		CEVNPR47M50
	C3063		CEVR47M50
	C3511		CKSQYB102K50
	C3001–C3005, C3028, C3056, C3057		CKSQYB103K50
	C3101, C3104, C3106, C3355		CKSQYB103K50
	C3013, C3020–C3023, C3026, C3031		CKSQYB104K25
	C3054, C3058, C3060, C3115, C3151		CKSQYB104K25
	C3205, C3210, C3211, C3225		CKSQYB104K25
	C3230, C3231, C3248, C3253, C3314		CKSQYB104K25
	C3403–C3407, C3501, C3510, C3601		CKSQYB104K25
	C3651, C3701		CKSQYB104K25
	C3209, C3229		CKSQYB152K50
	C3615, C3635, C3665, C3685, C3715		CKSQYB222K50
	C3735		CKSQYB222K50
	C3051		CKSQYB223K50
	C3007, C3027, C3032, C3152, C3254		CKSQYB473K50
	C3603, C3619, C3621, C3639, C3641		CKSQYB473K50

Mark	No.	Description	Parts No.
	C3653, C3669, C3671, C3689, C3691		CKSQYB473K50
	C3703, C3719, C3721, C3739, C3741		CKSQYB473K50
	C3016, C3018, C3247, C3411		CKSRYB103K50
	C3112		CKSRYB473K16
	C3053, C3064, C3103, C3116, C3122		CKSRYF104Z25
	C3242, C3243, C3301–C3313		CKSRYF104Z25
	C3315–C3320, C3322, C3323		CKSRYF104Z25
	C3696–C3699		CKSRYF104Z25
RESISTORS			
	R3030, R3151, R3241–R3243		RS1/16S101J
	R3313–R3315, R3514–R3519		RS1/16S101J
	R3068, R3507–R3510		RS1/16S102J
	R3054, R3066, R3069, R3316, R3317		RS1/16S103J
	R3413–R3420, R3552, R3572–R3586		RS1/16S103J
	R3112, R3401–R3411, R3501, R3502		RS1/16S104J
	R3511, R3512, R3520, R3597–R3599		RS1/16S104J
	R3111		RS1/16S122J
	R3115		RS1/16S203J
	R3753, R3754		RS1/16S223J
	R3077		RS1/16S224J
	R3738		RS1/16S272J
	R3059, R3571		RS1/16S472J
	R3026, R3027		RS1/16S473J
	R3113, R3114, R3116		RS1/16S751J
	Other Resistors		RS1/10S□□□J

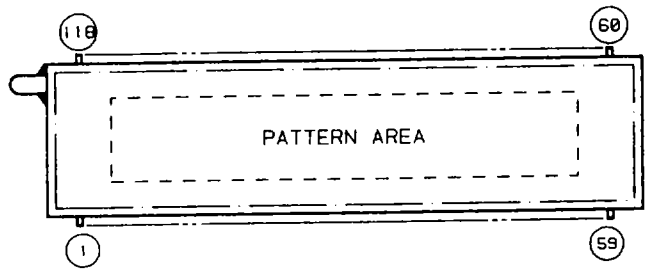
Mark	No.	Description	Parts No.
OTHERS			
		PIN JACK (1P)	AKB7035
	CN3502	CONNECTOR (9P)	KPC9
	CN3601	CONNECTOR (11P)	KPE11
	CN3201	CONNECTOR (3P)	KPE3
	CN3501	CONNECTOR (5P)	KPE5
	X3501 (8.00MHz)		ASS1015
	X3251 (18.432MHz)		ASS1035
	X3003 (46.08MHz)		ASS7007
	X3352 (33.00MHz)		ASS7008
	X3001 (18.432MHz)		ASS7009

5. FL INFORMATION

■ AAV7018 (V101: AC-3 FL ASSY)

● FL TUBE

● Pin Assignment



● Pin Connection

PIN NO.	118	117	116	115	114	113	112	111	110	109
CONNECTION	F1	F1	F1	NP	NP	7G	6G	5G	4G	3G

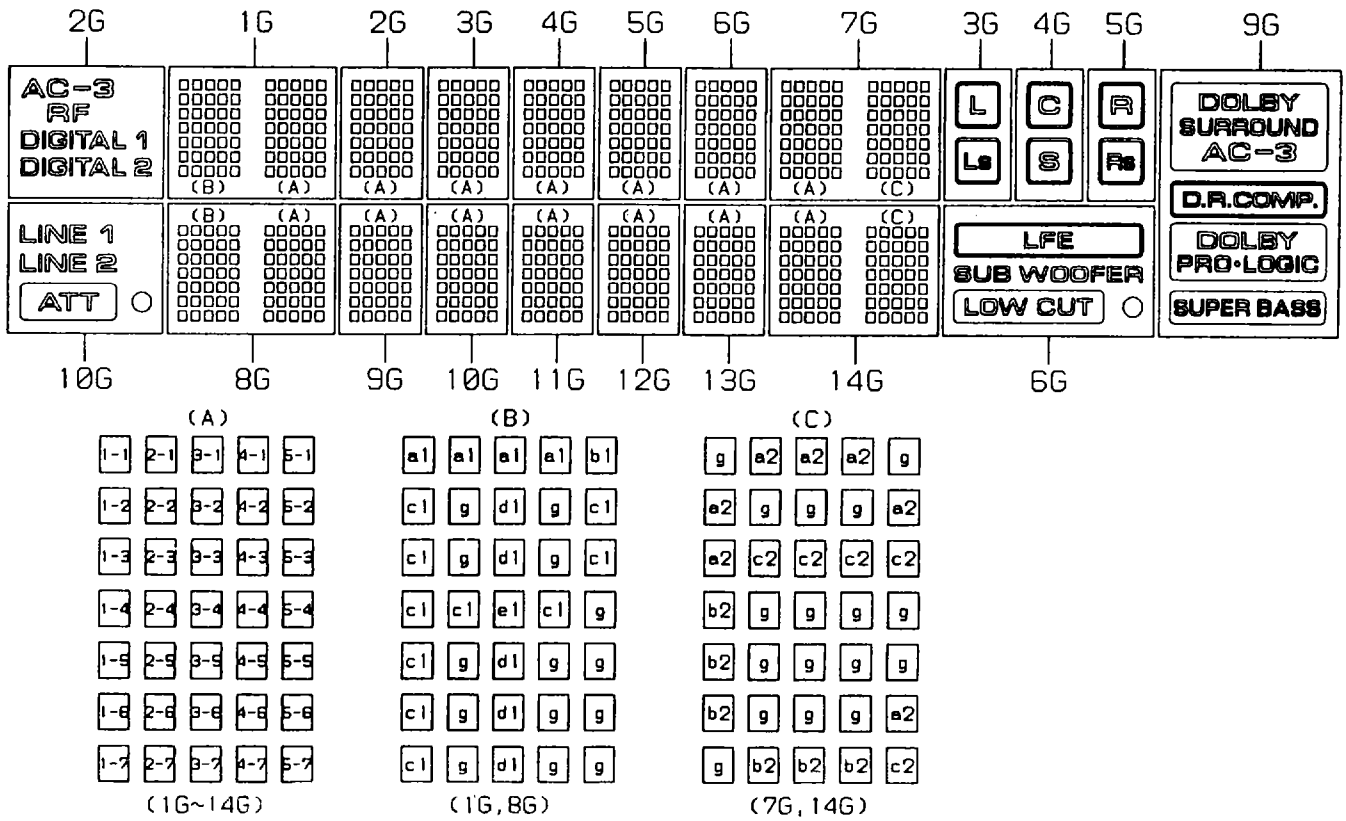
PIN NO.	108	107	106	105	104	103	102	101	100	99	98	97	96	95	94	93	92	91	90	89	88	87	86	85	84	83	82	81	80	79	78	77	76	75	74	73	72	71	70	69	68	67	66	65	64	63	62	61
CONNECTION	2G	1G	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	NC	NP	F2	F2	F2

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
CONNECTION	F1	F1	F1	NP	NP	8G	9G	10G	11G	12G	13G	14G	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NP	44	43	42	41	40	39

PIN NO.	51	52	53	54	55	56	57	58	59
CONNECTION	NP	F2	F2	F2	1C	NP	NP	F2	F2

NOTE
1) F1,F2 --- Filament
2) NP ------ No pin
3) NC ------ No connection
4) DL ------ Datum Line
5) 1G~14G -- Grid
6) 1C ------ Internal connection

● Grid Assignment



● Anode Conecction

	1G~14G
P1	1-1
P2	2-1
P3	3-1
P4	4-1
P5	5-1
P 6	1-2
P 7	2-2
P 8	3-2
P 9	4-2
P10	5-2
P11	1-3
P12	2-3
P13	3-3
P14	4-3
P15	5-3

	1G~14G
P16	1-4
P17	2-4
P18	3-4
P19	4-4
P20	5-4
P21	1-5
P22	2-5
P23	3-5
P24	4-5
P25	5-5
P26	1-6
P27	2-6
P28	3-6
P29	4-6
P30	5-6

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G ~13G	14G
P31	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7
P32	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7
P33	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7
P34	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7
P35	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7
P36	a1	AC-3 RF	(L)	(C)	(R)	LFE	a2	a1	DOLBY SURROUND AC-3	LINE 1	-	a2
P37	b1	DIGITAL 1	L	C	R	(LFE)	b2	b1	D.R.COMP.	LINE 2	-	b2
P38	c1	DIGITAL 2	Ls	S	Rs	SUB WOOFER	c2	c1	DOLBY PRO·LOGIC	ATT	-	c2
P39	d1	-	(Ls)	(S)	(Rs)	LOW CUT	-	d1	SUPER BASS	○	-	-
P40	e1	-	-	-	-	○	-	e1	-	-	-	-
P41	g	-	-	-	-	-	g	g	-	-	-	g

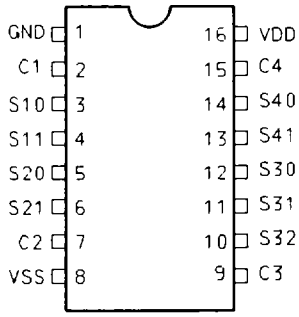
6. IC INFORMATION

● *The information shown in the list is basic information andmay not correspond exactly to that shown in the schematic diagram.*

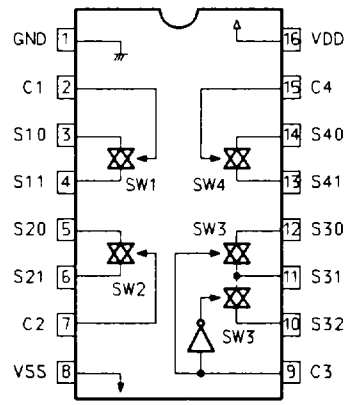
■ TC9214AF (IC3771: AC-3 ASSY)

● Analog Switch

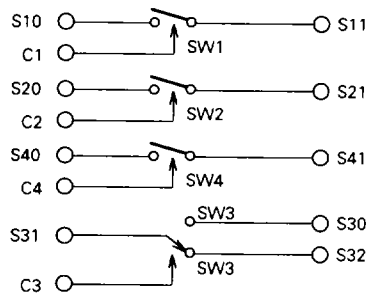
● Pin Assignment (Top View)



● Block Diagram



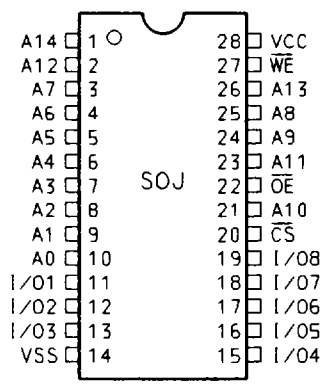
● Pin Function

No.	Symbol	Pin Name	Description
1	GND	Ground	2 power supply operation: +B → VDD 0 V → GND −B → VSS 1 power supply operation: +B → VDD 0 V → GND, VSS
8	Vss	Power supply (−)	
16	VDD	Power supply (+)	
2	C1	SW1 control	Switch Connection  Truth Table C1, C2, C3 / SW1, SW2, SW3 H / ON L / OFF C3 / S30-S31 / S31-S32 H / ON / OFF L / OFF / ON
3	S10	SW1 Input/output	
4	S11		
5	S20	SW2 Input/output	
6	S21		
7	C2	SW2 control	
9	C3	SW3 control	
10	S32	SW3 Input/output	
11	S31		
12	S30		
13	S41	SW4 Input/output	
14	S40		
15	C4	SW4 control	

KM68257CJ-20 (IC3341, IC3342: AC-3 ASSY)

S-RAM

- Pin Assignment (Top View)



- Pin Function

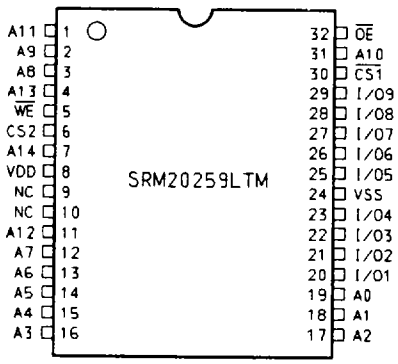
No.	Pin Name	Description
1	A14	Address Inputs
2	A12	
3 | 10	A7 | A0	
11 | 13	I/O1 | I/O3	Data Inputs/Outputs
14	Vss	Ground
15 | 19	I/O4 | I/O8	Data Inputs/Outputs

No.	Pin Name	Description
20	$\overline{CS}$	Chip Select
21	A10	Address Input
22	$\overline{OE}$	Output Enable
23	A11	Address Inputs
24	A9	
25	A8	
26	A13	
27	$\overline{WE}$	Write Enable
28	Vcc	Power (+5V)

SRM20259LTM10 (IC3002: AC-3 ASSY)

S-RAM

- Pin Assignment (Top View)



- Pin Function

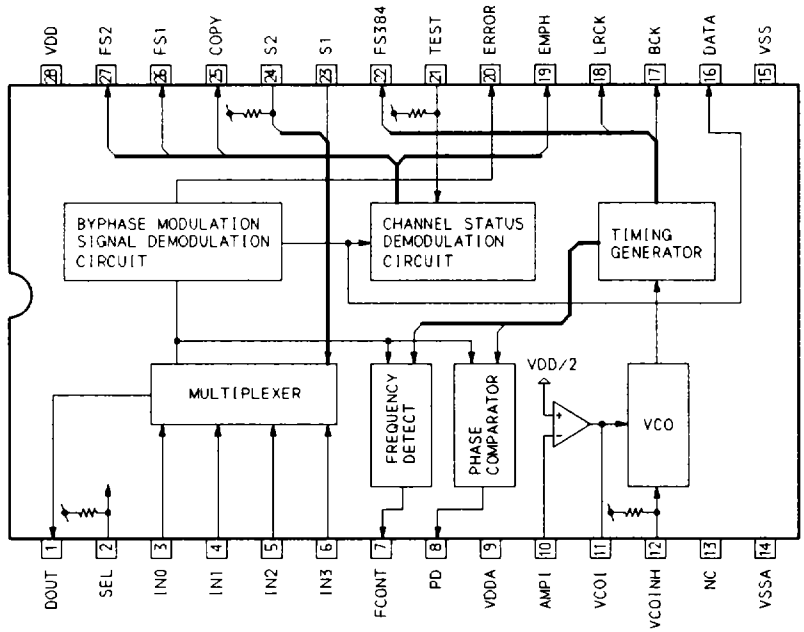
No.	Pin Name	Description
1	A11	Address Inputs
2	A9	
3	A8	
4	A13	
5	$\overline{WE}$	Write Enable
6	CS2	Chip Select 2
7	A14	Address Input
8	VDD	Power (+5V)
9 | 10	NC	Not Connect
11	A12	Address Inputs
12 | 19	A7 | A0	

No.	Pin Name	Description
20 | 23	I/O1 | I/O4	Data Inputs/Outputs
24	Vss	Power (0V)
25 | 29	I/O5 | I/O9	Data Inputs/Outputs
30	$\overline{CS1}$	Chip Select 1
31	A10	Address Input
32	$\overline{OE}$	Output Enable

■ TC9245F (IC3101: AC-3 ASSY)

● Digital Audio Interface Receiver

● Block Diagram



● Pin Function

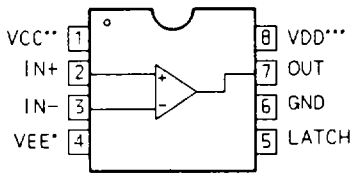
No.	Symbol	Description			
		I/O	Parallel Mode	I/O	Serial Mode
1	DOUT	O	IN0 to IN2 selection output terminal. Fixed "L" output at the time of IN3 selection		
2	SEL	I	Input terminal for microcomputer interface mode switching. Correspondence to parallel mode when "H" or open and to serial mode when "L".		
3	IN0	I	Digital audio data input terminal.		
4	IN1				
5	IN2				
6	IN3				
7	FCONT	O	PLL mislock detection signal output terminal.		
8	PD	O	Phase comparator phase error signal output terminal.		
9	VDDA	–	Analog power supply voltage terminal.		
10	AMPI	I	Operation amplifier input terminal for LPF.		
11	VCOI	O	Operation amplifier output terminal. (VCO oscillation control voltage output)		
12	$\overline{\text{VCOINH}}$	I	Input terminal for VCO oscillation stop control.		
13	NC	–	Not connected terminal.		
14	VSSA	–	Analog ground terminal.		
15	VSS	–	Digital ground terminal.		

No.	Symbol	Description			
		I/O	Parallel Mode	I/O	Serial Mode
16	DATA	O	Digital audio data output terminal.		
17	BCK	O	Bit clock output terminal. (32 fs)		
18	LRCK	O	LR clock output terminal. L/R channel polarity fixed.	O	LR clock output terminal. L/R channel polarity variable.
19	EMPH	O	Emphasis output terminal. Emphasis with "H".		
20	$\overline{\text{ERROR}}$	O	Error detection flag output terminal. Error detection with "L.		
21	$\overline{\text{TEST}}$	I	Test input terminal.		
22	FS384	O	384 fs clock output terminal.		
23	S1	I	Input selection terminal.	O	192 fs or 128 fs clock output terminal.
24	S2	I		I	Microcomputer data I/O mode switching terminal.
25	COPY	O	Copy prohibition flag output terminal. Copy prohibition with "L".	I/O	Microcomputer data I/O terminal.
26	FS1	O	Sampling frequency bit decode output terminal.	I	Microcomputer data latch pulse input terminal.
27	FS2	O		I	Microcomputer data transfer clock input terminal.
28	VDD	–	Digital power supply voltage terminal.		

■ MAX903CSA (IC3053: AC-3 ASSY)

● Comparator

● Block Diagram



* ANALOG V- AND SUBSTRATE
** ANALOG V+
*** DIGITAL V+

● Pin Function

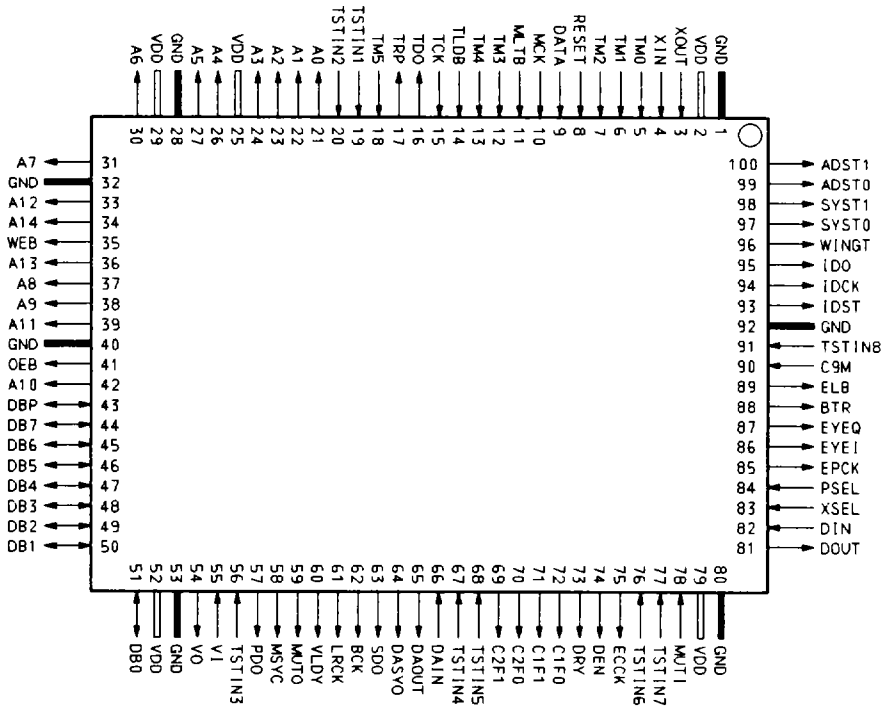
No.	Pin Name	Description
1	Vcc	Analog Power Supply (+)
2	IN+	Input (+)
3	IN−	Input (−)
4	VEE	Analog Power Supply (−) (Substrate)

No.	Pin Name	Description
5	LATCH	Latch Input
6	GND	Ground
7	OUT	Output
8	VDD	Digital Power Supply (+)

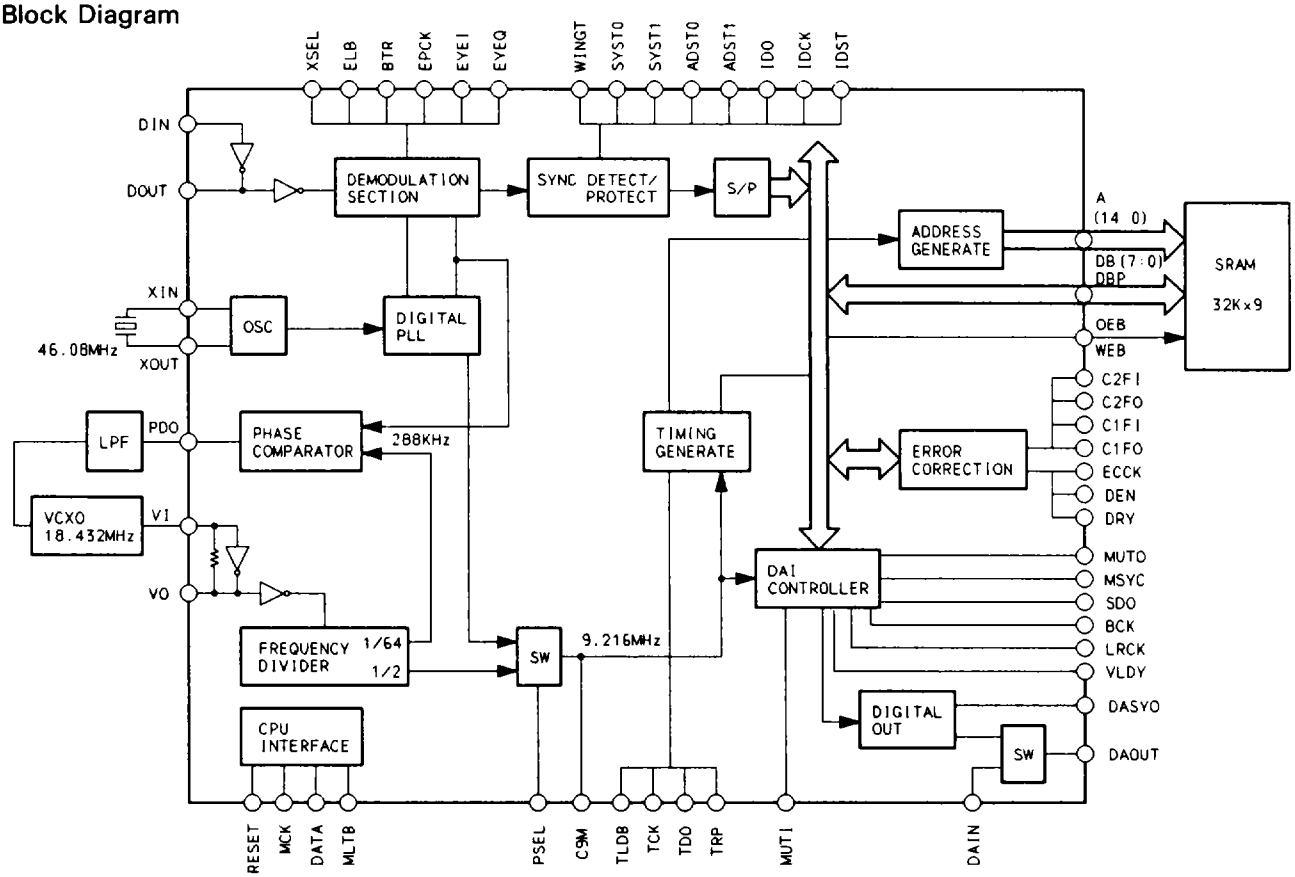
PD4606A (IC3001: AC-3 ASSY)

AC-3 RF Demodulator

- Pin Assignment (Top View)



- Block Diagram



● Pin Function

No.	Pin Name	I/O	Description
1	GND	–	GND (0 V)
2	VDD	–	Power supply (+5 V)
3	XOUT	O	Crystal oscillation circuit output
4	XIN	I	Crystal oscillation circuit input
5	TM0	I	For IC test mode setting, normally not connected.
6	TM1		
7	TM2		
8	RESET	I	System reset, reset with "L". Becomes "L" once at the time of power ON.
9	DATA	I	Serial data input from the CPU (LSB first)
10	MCK	I	CPU serial input clock. The data are latched at the rising edge of the clock.
11	MLTB	I	CPU input latch. The serial data from the CPU (8 bit) are latched to the register.
12	TM3	I	For IC test mode setting, normally not connected.
13	TM4		
14	TLDB	I	Tag code load signal. With "L", the tag code is loaded to the 16 bit shift register.
15	TCK	I	Clock for tag code output. Data output at the rising edge of the clock.
16	TDO	O	Tag code serial data output (MSB first).
17	TRP	O	Tag code update signal. Becomes "H" on completion of the correction operation for one block when there has been no error for the tag code.
18	TM5	I	For IC test mode setting, normally not connected.
19	TSTIN1	I	For IC test. Normally not connected.
20	TSTIN2		
21	A0	O	External RAM address output. Address 0 (LSB)
22	A1	O	External RAM address output. Address 1
23	A2	O	External RAM address output. Address 2
24	A3	O	External RAM address output. Address 3
25	VDD	–	Power supply (+5 V)
26	A4	O	External RAM address output. Address 4
27	A5	O	External RAM address output. Address 5
28	GND	–	GND (0 V)
29	VDD	–	Power supply (+5 V)
30	A6	O	External RAM address output. Address 6
31	A7	O	External RAM address output. Address 7

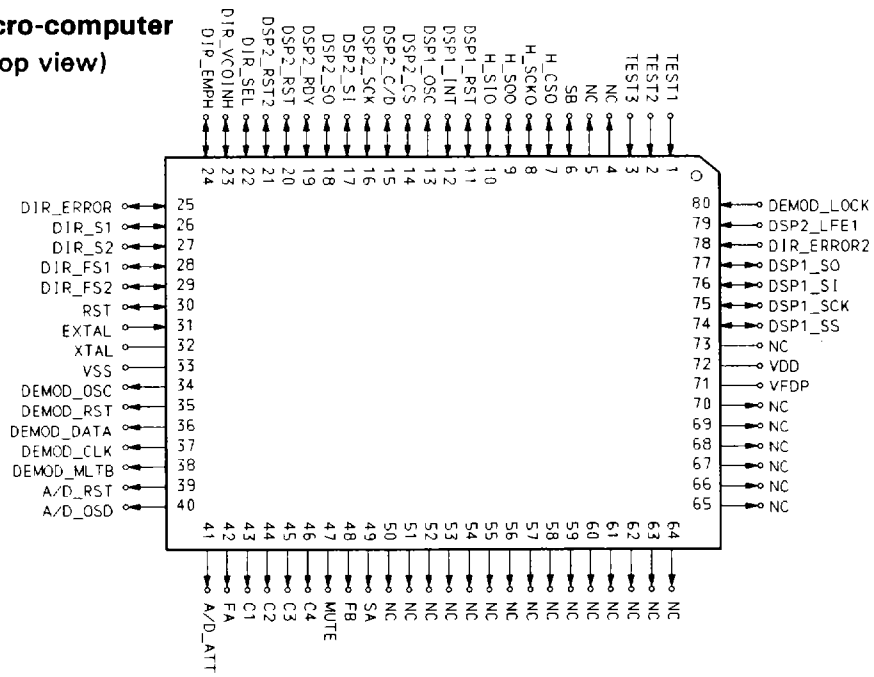
No.	Pin Name	I/O	Description
32	GND	–	GND (0 V)
33	A12	O	External RAM address output. Address 12
34	A14	O	External RAM address output. Address 14 (MSB)
35	WEB	O	External RAM write enable signal. Active with "L".
36	A13	O	External RAM address output. Address 13
37	A8	O	External RAM address output. Address 8
38	A9	O	External RAM address output. Address 9
39	A11	O	External RAM address output. Address 11
40	GND	–	GND (0 V)
41	OEB	O	External RAM output enable signal. Active with "L".
42	A10	O	External RAM address output. Address 10
43	DBP	I/O	External RAM data terminal. For erasure pointer.
44 | 51	DB7 | DB0	I/O	External RAM data terminal. Data bus 7 | External RAM data terminal. Data bus 0
52	VDD	–	Power supply (+5 V)
53	GND	–	GND (0 V)
54	VO	O	VCXO output
55	VI	I	VCXO input
56	TESTIN3	I	For IC test. Normally not connected.
57	PDO	O	Output of the phase comparator (3 states)
58	MSYC	O	"H" at the time of an AC−3 sync signal. For monitoring.
59	MUTO	O	Muting output. Muting with "H". Becomes "H" with "$\overline{\text{MUTI}}$ = H" or when AC−3 is not in sync.
60	VLDY	O	Output of the validity flag. Correct data with "L".
61	LRCK	O	L/R switching clock. 48 kHz. L channel with "H".
62	BCK	O	Bit clock. 3.072 MHz
63	SDO	O	Serial data output
64	DASYO	O	Digital out preamble B identification signal
65	DAOUT	O	Digital out output
66	DAIN	I	Digital audio interface signal input. According to the internal register setting, the signal from digital out processed in the IC and "DAIN" is selected and put out to "DAOUT".
67	TSTIN4	I	For IC test. Normally not connected.
68	TSTIN5		

No.	Pin Name	I/O	Description
69	C2F1	O	Indication of the C2 correction error status. Output whether complete correction was possible or not.
70	C2F0	O	Indication of the C2 correction error status. Output of the number of errors with C2.
71	C1F1	O	Indication of the C1 correction error status. Output of error or no error with C1.
72	C1F0	O	Indication of the C1 correction error status. Output of the number of errors with C1.
73	DRY	O	For monitoring of the error correction section
74	DEN	O	For monitoring of the error correction section
75	ECCK	O	Clock of the error correction section. 576 kHz
76	TSTIN6	I	For IC test. Normally not connected.
77	TSTIN7		
78	MUTI	I	Muting input. Muting with "H".
79	VDD	–	Power supply (+5 V)
80	GND	–	GND (0 V)
81	DOUT	O	QPSK inversion output
82	DIN	I	QPSK signal input
83	XSEL	I	Crystal selection. 46.08 MHz with "H", 36.864 MHz with "L".
84			
85	EPCK	O	QPSK eye pattern clock. 288 kHz
86	EYEI	O	Eye pattern output: Phase I
87	EYEQ	O	Eye pattern output: Phase Q
88	BTR	O	
89	ELB	O	
90	C9M	O	9.216 MHz
91	TSTIN8	I	For IC test. Normally not connected.
92	GND	–	GND (0 V)
93	IDST	O	Signal indicating the start position
94	IDCK	O	ID signal sample clock. The data change with the dropping edge of the clock. 576 kHz
95	IDO	O	ID data output (MSB first)
96	WINGT	O	Becomes "L" while the correction block sync signal is being searched.
97	SYST0	O	Indicates the lock status of the correction block sync signal.
98	SYST1	O	Indicates the lock status of the correction block sync signal.
99	ADST0	O	Indicates the continuity status of the correction block ID address.
100	ADST1	O	Indicates the continuity status of the correction block ID address.

■ PDG168B (IC3501: AC-3 ASSY)

● AC-3 Control Micro-computer

● Pin Assignment (Top view)



● Pin Function

No.	Pin Name	I/O	Description	CPU
1	TEST1	I	"L" or "H" is set with an external resistor. At the time of "L" level, operation as microcomputer for AWX7016. At the time of "H" level, operation as microcomputer for AWX7017.	PE3/INT3
2	TEST2	I	Fixed to "L" with an external resistor.	PE4
3	TEST3			PE5
4	NC	O	Not used terminal.	PE6
5				PE7
6	SB	O	REAR channel output level control terminal 2. Connected to terminal B of IC3653.	PB0
7	H_CSO	I/O	Chip selection I/O terminal for communication with the microcomputer on the set side. Connected to the CS terminal of CN3501. During communication with "L".	CSO_
8	H_CSKO	I	Serial data transfer clock I/O terminal for communication with the microcomputer on the set side. Connected to the SCK terminal of CN3501.	SCKO_
9	H_SOO	I	Serial data input terminal for communication with the microcomputer on the set side. Connected to the SO terminal of CN3501. Matched to the name of the microcomputer on the set side. The data I/O direction is opposite to the terminal name.	SIO
10	H_SIO	O	Serial data output terminal for communication with the microcomputer on the set side. Connected to the SI terminal of CN3501. Matched to the name of the microcomputer on the set side. The data I/O direction is opposite to the terminal name.	SOO
11	DSP1_RST	O	IC3301 reset control terminal. Reset with "L". Connected to the RESET terminal of IC3301.	PB5
12	DSP1_INT	O	IC3301 interrupt control terminal, Interrupt with "L". Connected to the INT_ terminal of IC3301.	PB6
13	DSP1_OSC	O	IC3301 oscillation control terminal. Oscillation with "H". Connected to the NC terminal of X3352.	PB7
14	DSP2_CS	O	IC3401 serial data transfer chip selection output terminal. Under control with "L". Connected to the CS_ terminal of IC3401.	PC0

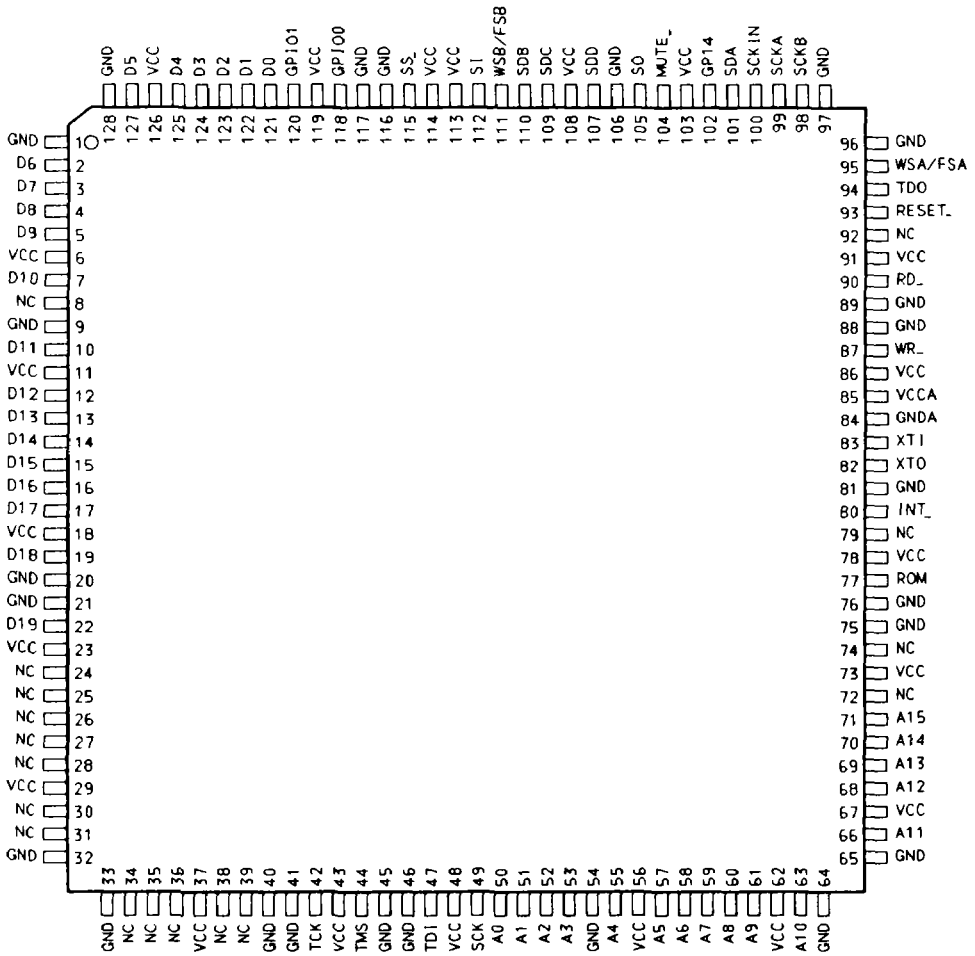
No.	Name	I/O	Description	CPU
15	DSP2_C/D	O	IC3401 serial data transfer command/data switching control terminal. Connected to the C_/D terminal of IC3401. During command transfer with "L". During data transfer with "H".	PC1
16	DSP2_SCK	O	IC3401 serial data transfer clock output terminal. Connected to the SCK_ terminal of IC3401.	PC2
17	DSP2_SI	O	IC3401 serial data output terminal. Connected to the SI terminal of IC3401. Matched to the terminal name of IC3401. The data I/O direction is opposite to the terminal name.	PC3
18	DSP2_SO	I	IC3401 serial data input terminal. Connected to the SO terminal of IC3401. Matched to the terminal name of IC3401. The data I/O direction is opposite to the terminal name.	PC4
19	DSP2_RDY	I	IC3401 ready information input terminal. Connected to the RDY terminal of IC3401. "H" at the time of ready.	PC5
20	DSP2_RST	O	IC3401 reset control terminal 1. Connected to the RST_ terminal of IC3401.	PC6
21	DSP2_RST2	O	IC3401 reset control terminal 2. Connected to the RST2_ terminal of IC3401.	PC7
22	DIR_SEL	O	IC3102 input switching control terminal. Connected to the SELECT1 terminal of IC3102.	PA0
23	DIR_VCOINH	O	IC3101 oscillation control terminal. Connected to the VCOINH_ terminal of IC3101. Oscillation stop with "L".	PA1
24	DIR_EMPH	I	IC3101 emphasis information input terminal. Connected to the EMPH terminal of IC3101. "H" when the emphasis of the program source is ON.	PA2
25	DIR_ERROR	I	IC3101 error information input terminal. Connected to the ERROR_ terminal of IC3101. "L" when DIR is not locked.	PA3
26	DIR_S1	O	IC3101 input switching control terminal 1. Connected to the S1 terminal of IC3101.	PA4
27	DIR_S2	O	IC3101 input switching control terminal 2. Connected to the S2 terminal of IC3101.	PA5
28	DIR_FS1	I	Sampling frequency information input terminal 1 for the IC3101 input signal. Connected to the FS1 terminal of IC3101.	PA6
29	DIR_FS2	I	Sampling frequency information input terminal 2 for the IC3101 input signal. Connected to the FS2 terminal of IC3101.	PA7
30	RST	I	System reset input terminal. Connected to the RST terminal of CN3501. Reset with "L".	RST_
31	EXTAL	I	Crystal connection terminal for system clock oscillation. When an external clock is to be supplied, input is made to the EXTAL terminal, and a clock with the reverse phase is given as input to the XTAL terminal.	EXTAL
32	XTAL	O	Crystal connection terminal for system clock oscillation. When an external clock is to be supplied, input is made to the EXTAL terminal, and a clock with the reverse phase is given as input to the XTAL terminal.	XTAL
33	VSS	–	GND terminal.	Vss
34	DEMOD_OSC	O	IC3001 oscillation control terminal. Connected to the NC terminal of X3003. Oscillation with "H".	PD0
35	DEMOD_RST	O	IC3001 reset control terminal. Connected to the RESET terminal of IC3001. Reset with "L".	PD1
36	DEMOD_DATA	O	IC3001 serial data output terminal. Normally not used. Connected to the DATA terminal of IC3001.	PD2
37	DEMOD_CLK	O	IC3001 serial data transfer clock output terminal. Normally not used. Connected to the MCK terminal of IC3001.	PD3
38	DEMOD_MLTB	O	IC3001 serial data output terminal. Normally not used. Connected to the MLTB terminal of IC3001.	PD4
39	A/D_RST	O	IC3241 reset control terminal. Connected to the PD terminal of IC3241.	PD5

No.	Name	I/O	Description	CPU
40	A/D_OSC	O	IC3241 oscillation control terminal. Oscillation with "L". Connected to the B terminal of Q3251.	PD6
41	A/D_ATT	O	IC3241 input attenuation control terminal. Attenuation with "L".	PD7
42	FA	O	FRONT channel output level control terminal 1. Connected to the A terminal of IC3603.	PF0
43	C1	O	SW sound output control terminal. Output to the FRONT channel with "H". Connected to the C1 terminal of IC3771.	PF1
44	C2	O	SW sound output control terminal. Output to the REAR channel with "H". Connected to the C2 terminal of IC3771.	PF2
45	C3	O	SW sound output control terminal. Output to the SW channel with "H". Connected to the C3 terminal of IC3771.	PF3
46	C4	O	SW sound output control terminal. Output to the CENTER channel with "H". Connected to the C4 terminal of IC3771.	PF4
47	MUTE	O	Output muting control terminal. Muting with "H".	PF5
48	FB	O	FRONT channel output level control terminal 2. Connected to the B terminal of IC3603.	PF6
49	SA	O	REAR channel output level control terminal 1. Connected to the A terminal of IC3653.	PF7
50 | 54	NC	O	Not used	S16 | S20
55 | 62	NC	O	Not used	T15/S21 | T8/S28
63 | 70	NC	O	Not used	T7 | T0
71	VFDP	–	Power supply terminal for FDP.	VFDP
72	VDD	–	Positive power supply terminal.	VDD
73	NC	–	Connected to VDD at the time of normal operation.	NC
74	DSP1_SS	O	IC3301 serial data transfer slave selection control terminal. Slave with "L". Connected to the SS_ terminal of IC3301.	PG0
75	DSP1_SCK	O	IC3301 serial data transfer clock output terminal. Connected to the SCK terminal of IC3301.	PG1
76	DSP1_SI	O	IC3301 serial data output terminal. Connected to the SI terminal of IC3301. Matched to the terminal name of IC3301. The data I/O direction is opposite to the terminal name.	PG2
77	DSP1_SO	I	IC3301 serial data input terminal. Connected to the SO terminal of IC3301. Matched to the terminal name of IC3301. The data I/O direction is opposite to the terminal name.	PG3
78	DIR_ERROR2	I	IC3101 error information input terminal. Connected to the ERROR_ terminal of IC3101. "L" when DIR is not locked.	PE0/INT0
79	DSP2_LFE1	I	IC3401 low frequency sound (LFE) detection information input terminal 1. Connected to the GF1 terminal of IC3401. "H" when low frequency sound (LFE) is detected.	PE1/INT1
80	DEMOD_LOCK	I	IC3001 lock information input terminal. Connected to the MUT0 terminal of IC3001. "H" when the demodulator (IC3001) is not locked.	PE2/INT2

■ ZR38500 (IC3301: AC-3 ASSY)

● AC-3 Decoder

● Pin Assignment (Top View)



● Pin Function

No.	Pin Name	Description
1	GND	———
2 | 5	D6 | D9	This is a bidirectional data bus for external memory access.
6	VCC	———
7	D10	This is a bidirectional data bus for external memory access.
8	NC	———
9	GND	———
10	D11	This is a bidirectional data bus for external memory access.
11	VCC	———

No.	Pin Name	Description
12 | 17	D12 | D17	This is a bidirectional data bus for external memory access.
18	VCC	———
19	D18	This is a bidirectional data bus for external memory access.
20 | 21	GND	———
22	D19	This is a bidirectional data bus for external memory access.
23	VCC	———
24 | 28	NC	———

No.	Pin Name	Description
29	VCC	———
30	NC	———
31		
32	GND	———
33		
34	NC	———
|		
36		
37	VCC	———
38	NC	———
39		
40	GND	———
41		
42	TCK	ICE interface clock (JTAG)
43	VCC	———
44	TMS	ICE interface mode select (JTAG)
45	GND	———
46		
47	TDI	ICE interface data input (JTAG)
48	VCC	———
49	SCK	Serial port interface: clock input (SPI)
50	A0	Address bus
|	|	
53	A3	
54	GND	———
55	A4	Address bus
56	VCC	———
57	A5	Address bus
|	|	
61	A9	
62	VCC	———
63	A10	Address bus
64	GND	———
65		
66	A11	Address bus

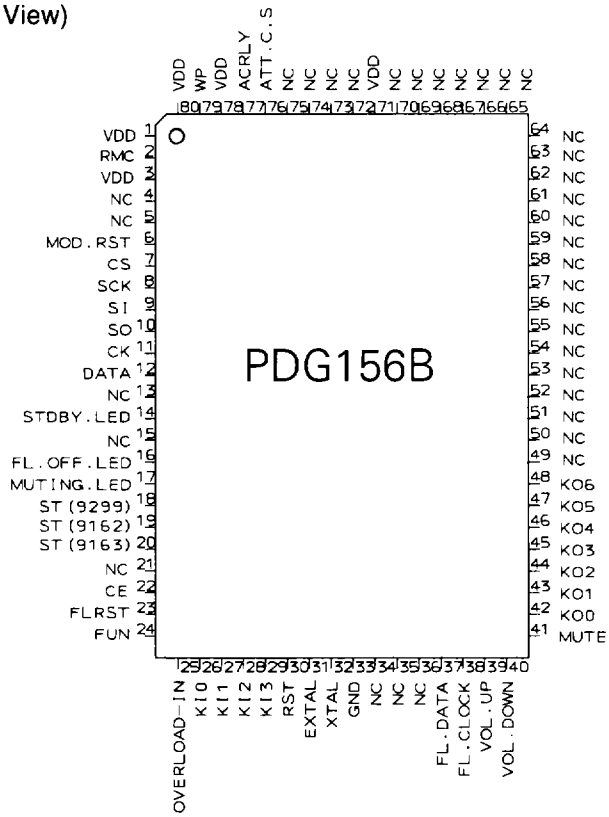
No.	Pin Name	Description
67	VCC	———
68	A12	Address bus
|	|	
71	A15	
72	NC	———
73	VCC	———
74	NC	———
75	GND	———
76		
77	ROM	Memory select signal
78	VCC	———
79	NC	———
80	INT__	External interrupt input
81	GND	———
82	XTO	Crystal oscillator input/output terminal
83	XTI	
84	GNDA	———
85	VCCA	———
86	VCC	———
87	WR__	Write strobe
88	GND	———
89		
90	RD__	Read strobe
91	VCC	———
92	NC	———
93	RESET__	Reset input
94	TDO	ICE interface data output (JTAG)
95	WSA/FSA	Group A serial port (for input) word selection or frame sync input/output.
96	GND	———
97		
98	SCKB	Clock input/output for group B serial port
99	SCKA	Clock input/output for group A serial port

No.	Pin Name	Description
100	SCKIN	Clock input/output for group B serial port
101	SDA	Data input for serial port A
102	GP14	General-purpose input pin
103	VCC	———
104	MUTE__	Mute pin
105	SO	Serial port interface: serial data output (SPI)
106	GND	———
107	SDD	Data output for serial port D
108	VCC	———
109	SDC	Data output for serial port C
110	SDB	Data output for serial port B
111	WSB/FSB	Group B serial port (for input) word selection or frame sync input/output.
112	SI	Serial port interface: serial data input (SPI)
113 114	VCC	———
115	SS__	Serial port interface: slave select input (SPI)
116 117	GND	———
118	GPIO0	General-purpose input/output pin
119	VCC	———
120	GPIO1	General-purpose input/output pin
121 125	D0 D4	This is a bidirectional data bus for external memory access.
126	VCC	———
127	D5	This is a bidirectional data bus for external memory access.
128	GND	———

■ PDG156B (IC301:POWER SUPPLY ASSY)

● AC-3 PROCESSOR U-COM.

●Pin Assignment (Top View)

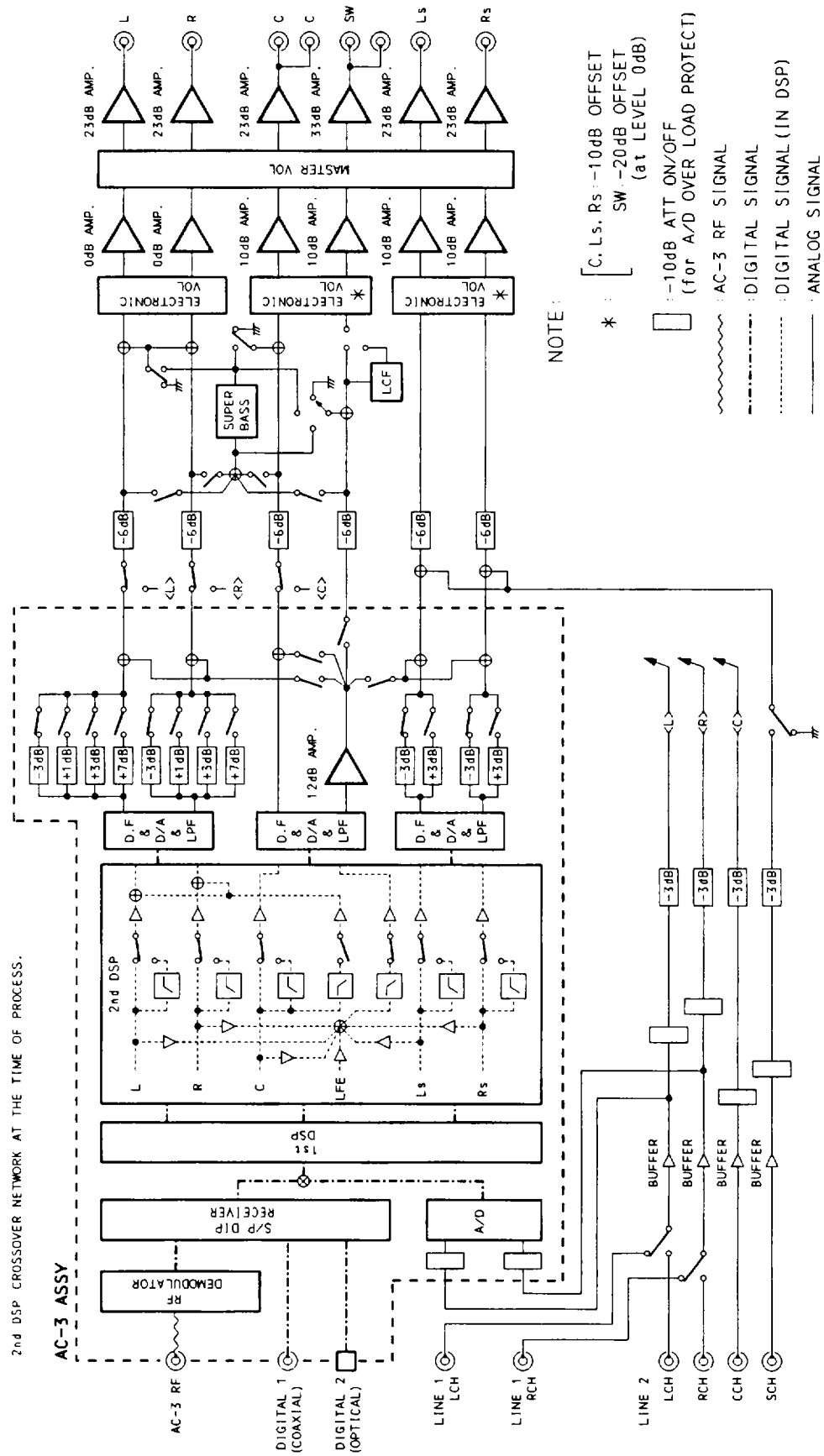


●Pin Function

No.	Pin Name	Pin Function	I/O	Function
1	PE3	———	I	Not Used (Connected to VDD)
2	PE4	RMC	I	Remote Control Signal Input
3	PE5	———	I	Not Used (Connected to VDD)
4	PE6	———	O	Not Used (N. C.)
5	PE7	———	O	Not Used (N. C.)
6	PB0	MOD RST	O	Control micro-computer reset port for AC-3 module
7	PB1	CS	I/O	Control micro-computer bidirectional communication for AC-3 module (CS)
8	PB2	SCK	O	Control micro-computer bidirectional communication for AC-3 module (CLOCK)
9	PB3	SI	I	Control micro-computer bidirectional communication for AC-3 module (DATA IN)
10	PB4	SO	O	Control micro-computer bidirectional communication for AC-3 module (DATA OUT)
11	PB5	CK	O	Function SW/Electronic Volume CLOCK
12	PB6	DATA	O	Function SW/Electronic Vlume DATA
13	PB7	———	O	Not Used (N. C.)
14	PC0	STANDBY LED	O	STAND BY LED H:OFF L:ON
15	PC1	———	O	Not Used (N. C.)
16	PC2	FL OFF LED	O	DISPLAY OFF LED H:OFF L:ON
17	PC3	MUTING LED	O	MUTING LED H:OFF L:ON (Flashing)
18	PC4	ST(9299)	O	Electronic Volume STROBE

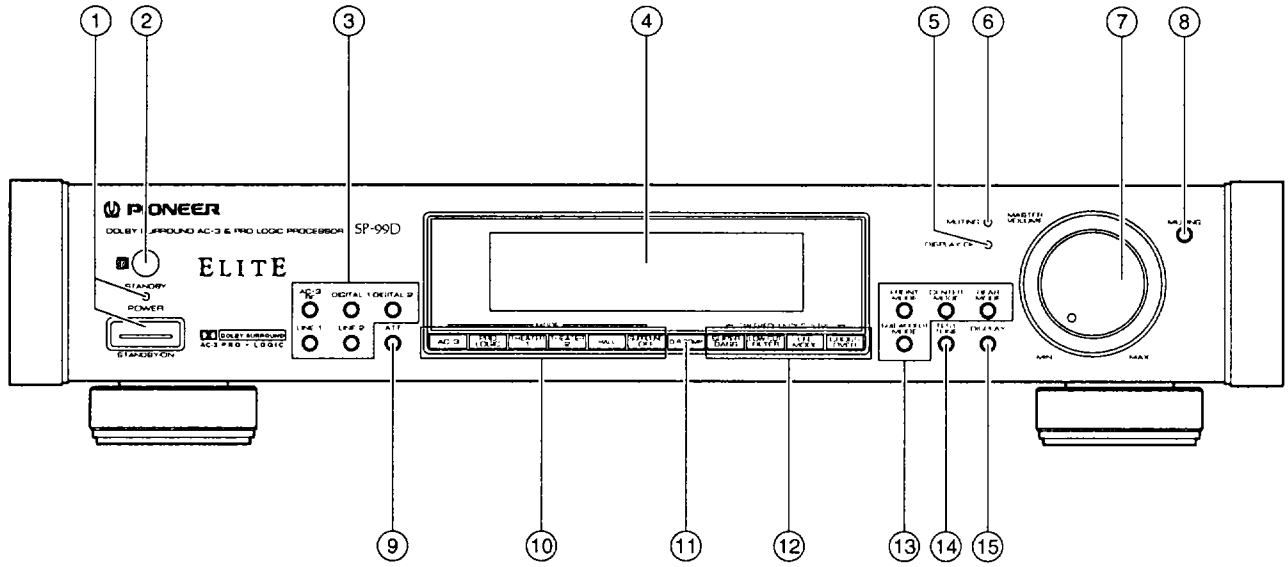
No.	Pin Name	Pin Function	I/O	Function
19	PC5	ST(9162)	O	Function SW (TC9162AN) STROBE
20	PC6	ST(9163)	O	Function SW (TC9163AN) STROBE
21	PC7	———	O	Not Used (N.C.)
22	PA0	CE	O	FL DRIVER (LC75712) CE
23	PA1	FL RST	O	FL DRIVER (LC75712) RESET
24	PA2	FUN	I	A/D Thermistor Temperature
25	PA3	OVERLOADIN	I	A/D OVER LOAD INPUT
26 | 29	PA4 | PA7	KIO | K13	I	KEY SCAN KEY INPUT 0 | KEY SCAN KEY INPUT 3
30	RST	RST	I	RESET
31	EXTAL	EXTAL	I	Conrected to System Clock (8.0MHz)
32	XTAL	XTAL		Conrected to System Clock (8.0MHz)
33	VSS	GND		GND
34 | 36	PD0 | PD2	———	O	Not Used (N. C.)
37	PD3	FL DATA	O	FL DRIVER (LC75712) DATA
38	PD4	FL CLOCK	O	FL DRIVER (LC75712) CLOCK
39	PD5	VOL UP	O	Electronic Volume Driver IC Control PORT
40	PD6	VOL DOWN	O	P39: HI P40: LOW..VOLUME UP P39: LOW P40: HI..VOLUME DOWN
41	PD7	MUTE	O	MUTING HI: MUTE OFF LOW: MUTE ON
42 | 48	PF0 | PF6	KO0 | KO6	O	KEY SCAN KEY OUTPUT 0 | KEY SCAN KEY OUTPUT 6
49	PF7	———	O	Not Used (N. C.)
50 | 54	S16 | S20	———	O	Not Used (N. C.)
55 | 70	T15 | T0	———	O	Not Used (N. C.)
71	VFDP	———		Not Used (N. C.)
72	VDD	VDD		Positive power supply
73	NC	———		Connected to VDD
74	PG0	———	O	Not Used (N. C.)
75	PG1	———	O	Not Used (N. C.)
76	PG2	ATT.C.S.	O	ANALOG INPUT ATT HI: ATT ON LOW: ATT OFF
77	PG3	AC RLY	O	POWER ON HI: POWERON LOW: POWER OFF
78	PE0	———	I	Not Used (Connected to VDD)
79	PE1	WP	I	AC50/60 PULSE INPUT
80	PE2	———	I	Not Used (Connected to VDD)

7. BLOCK DIAGRAM



8. PANEL FACILITIES

FRONT PANEL (For SP-99D)



① POWER STANDBY/ON switch and STANDBY indicator

This is the switch for electric power.

ON : When set to the ON position, power is supplied and the unit becomes operational.

STANDBY : When set to the STANDBY position, the main power flow is cut and the unit is no longer fully operational. A minute flow of power feeds the unit to maintain operation readiness.
The STANDBY indicator lights during standby.

After switching power ON, there is no sound for about five seconds. During this time, the STANDBY indicator flashes.

② Remote sensor

③ Input selector buttons

AC-3 RF : Press when playing an AC-3 (Dolby Surround Digital) compatible disc on a LaserDisc player connected to the AC-3 RF INPUT jack.

DIGITAL 1 : Press when playing a component connected to the DIGITAL 1 INPUT with a coaxial cable.

DIGITAL 2 : Press when playing a component connected to the DIGITAL 2 INPUT with an optical fiber cable.

LINE 1 : Press when playing components connected to an amplifier that's connected to the LINE 1 jacks.

LINE 2 : Press when playing components connected to an amplifier that's connected to the LINE 2 jacks.

④ Display

⑤ DISPLAY OFF indicator

This lights when DISPLAY is off.

⑥ MUTING indicator

This flashes when MUTING is on.

⑦ MASTER VOLUME control

Use it to simultaneously adjust the sound volume from the front, center, rear, and sub-woofer speakers.

⑧ MUTING button

Press to temporarily stop sound output. Press again to resume listening.

⑨ ATT (Attenuator) button

Press on, and audio input sensitivity is attenuated (–10 dB) to prevent clipping due to excessively high input levels. Switch this on if the overload indicator in the display section lights during playback. When you switch it on, the ATT indicator lights.

⑩ Surround/SFC Mode buttons

AC-3:
This operates only when you select DIGITAL 1 or DIGITAL 2 with the input selector buttons.
Pressing this button lets you switch between a component with an AC-3 digital audio output*1 and a component with another digital audio output, such as a CD player or LaserDisc player.

PRO LOGIC:
Switches DOLBY PRO-LOGIC SURROUND on/off.
When you select AC-3, it does not operate for auto select.

THEATER 1, THEATER 2:
Select when viewing video software. THEATER 2 provides a more mellow sound than THEATER 1.

HALL:
Select for concert hall ambience when enjoying music or other sources.

SURROUND OFF:
Switches surround mode (including DOLBY PRO-LOGIC) off.

NOTE:
This unit features a function for memorizing surround/SFC mode settings for each input function. This lets you store surround/SFC mode settings you often use for each function.

*1 You will be able to connect this unit to future components with AC-3 digital outputs.

⑪ D.R.COMP (Dynamic Range Compression) button

When the command for dynamic range compression of an AC-3 source's original signal has been specified, press this button and this unit compresses the dynamic range for an audibly improved SN ratio.

NOTE:

When the command for dynamic range compression of an AC-3 source is not specified, or during playback other than AC-3, the original signal level remains unchanged even if you press this button.

⑫ Low Frequency Control buttons

SUPER BASS:

Press this button when you want to boost the bass.
Frequencies in the 100 Hz and below range are boosted.

LOW CUT FILTER:

This improves the sub-woofer sound by cutting frequencies in the 40 Hz and below range. (This enables bass boosting while reducing the possibility of the sub-woofer clipping.)

LFE (Low Frequency Effect) MODE:

Sets the sub-woofer LFE channel attenuation level.
The setting changes as follows each time you press it:

→ +10 dB → 0 dB → OFF →

The recommended level for Dolby surround is +10 dB.

NOTE:

If you set to "+10 dB", front three channels (L + R + C) output power is required for the sub-woofer. If this is more power than the sub-woofer can handle, clipping may occur resulting in distortion.

CROSSOVER*2:

Use to set the crossover frequency.
The setting changes as follows each time you press it:

→ 100 Hz → 150 Hz → 200 Hz →

*2 Crossover

This function is convenient when a speaker is too small to reproduce low range frequencies, or when there is no sub-woofer connected. The low range frequencies that cannot be reproduced (80 to 100 Hz or lower), or sub-woofer signals, are automatically rerouted to connected speakers that can reproduce low frequencies within a set range. With the CROSSOVER button you can select the low frequency range below which signals are distributed to different channels.

⑬ Speaker setting buttons

Set the size of the connected speakers and whether speakers are connected or not.

⑭ TEST TONE button

Switches test tone output used for adjusting the volume level of each channel (except the sub-woofer) on/off.
It does not operate when surround is off.

⑮ DISPLAY button

Switches the display section on/off. When switched off, the ⑤ DISPLAY OFF indicator lights.

9. SPECIFICATIONS

Audio section

Input Jacks (Sensitivity/Impedance)

LINE 1, 2	200 mV/45 kΩ
DIGITAL 1 (COAXIAL)	0.5 Vp-p/75 Ω
AC-3 RF	0.4 Vp-p/75 Ω

Output Jacks (Level/Impedance)

FRONT, CENTER, REAR, SUB WOOFER	1 V/1 kΩ

Frequency Response

LINE 1, 2	10 Hz to 100 kHz ±3 dB
DIGITAL 1, 2	20 Hz to 20 kHz ±3 dB
AC-3 RF	20 Hz to 20 kHz ±3 dB

Total Harmonic Distortion (1 kHz)	0.008 %

SN Ratio (A network)

DIGITAL 1, 2
PCM full-scale input with 2V output level 20 kHz, LPF ON ... 98 dB

Miscellaneous

Power Supply Voltage	AC 120 V, 60 Hz
Power Consumption	45 W
External Dimensions	456 (W) x 92 (H) x 335 (D) mm 18 (W) x 4 (H) x 13 (D) in
Weight	6.0 kg (13 lb 4 oz)

Accessories

Remote Control Unit	1
Dry Cell Batteries (size AAA/R03)	2
Audio Cord	3
AC-3/RF Cord	1
Operating Instructions	1

NOTE:

The above specifications and external features may change without notice, due to modifications.