

# JVC

## SCHEMATIC DIAGRAMS

### VIDEO CASSETTE RECORDER

# HR-S5960Ex, HR-S5961Ex, HR-S5962Ex, HR-S5963Ex, HR-S5965EF, HR-S5965EK, HR-S5966EK

CD-ROM No.SML200305



**VIDEOplus+**® (EK model)

**SHOWVIEW**® (other model)

**S-VHS**

**Hi-Fi**

**Super VHS ET**

For disassembling and assembling of MECHANISM ASSEMBLY, refer to the SERVICE MANUAL No.86700 (MECHANISM ASSEMBLY).

### **SPECIFICATION** (The specifications shown pertain specifically to the model HR-S5960EX, S5961EX, S5962EX, S5963EX)

#### **GENERAL**

Power requirement	AC 220 V - 240 V~, 50 Hz/60 Hz
Power consumption	
Power on	16 W
Power off	3.5 W
Temperature	
Operating	5°C to 40°C
Storage	-20°C to 60°C
Operating position	Horizontal only
Dimensions (W x H x D)	400 mm x 94 mm x 270 mm
Weight	3.1 kg
Format	S-VHS/VHS PAL standard
Maximum recording time	
(SP)	240 min. with E-240 video cassette
(LP)	480 min. with E-240 video cassette

#### **VIDEO/AUDIO**

Signal system	PAL-type colour signal and CCIR monochrome signal, 625 lines 50 fields
Recording system	DA4 (Double Azimuth) head helical scan system
Signal-to-noise ratio	45 dB
Horizontal resolution	

VHS	250 lines
S-VHS	400 lines
Frequency range	
Normal audio	70 Hz to 10,000 Hz
Hi-Fi audio	20 Hz to 20,000 Hz
Input/Output	21-pin SCART connectors: IN/OUT x 1, IN/DECODER x 1RCA connectors: AUDIO OUT x 1

#### **TUNER/TIMER**

TV channel storage capacity	99 positions (+AUX position)
Tuning system	Frequency synthesized tuner
Channel coverage	
VHF	47 MHz - 89 MHz/104 MHz - 300 MHz/302 MHz - 470 MHz
UHF	470 MHz - 862 MHz
Aerial output	UHF channels 22 - 69 (Adjustable)
Memory backup time	Approx. 10 min.

#### **ACCESSORIES**

Provided accessories	: RF cable, Infrared remote control unit, Lithium battery - CR2032-
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HR-S5960EX, HR-S5961EX, HR-S5962EX, HR-S5963EX, HR-S5965EF, HR-S5965EK, HR-S5966EK V16S0


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**No.82961SCH**  
**2003/4**

# CHARTS AND DIAGRAMS

## NOTES OF SCHEMATIC DIAGRAM

### Safety precautions

The Components identified by the symbol  are critical for safety. For continued safety, replace safety critical components only with manufacturer's recommended parts.

### 1. Units of components on the schematic diagram

Unless otherwise specified.

- All resistance values are in ohm. 1/6 W, 1/8 W (refer to parts list).  
Chip resistors are 1/16 W.  
K: K $\Omega$  (1000 $\Omega$ ), M: M $\Omega$  (1000K $\Omega$ )
- All capacitance values are in  $\mu$ F, (P: PF).
- All inductance values are in  $\mu$ H, (m: mH).
- All diodes are 1SS133, MA165 or 1N4148M (refer to parts list).

**Note:** The Parts Number, value and rated voltage etc. in the Schematic Diagram are for references only. When replacing the parts, refer to the Parts List.

### 2. Indications of control voltage

AUX : Active at high.

$\overline{\text{AUX}}$  or AUX(L) : Active at low.

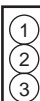
### 3. Interpreting Connector indications



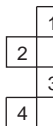
Removable connector



Wire soldered directly on board



Non-removable Board connector



Board to Board

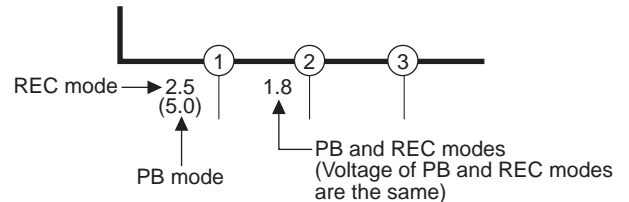


Connected pattern on board  
The arrows indicate signal path

**Note:** For the destination of each signal and further line connections that are cut off from the diagram, refer to "BOARD INTERCONNECTIONS"

### 4. Voltage measurement

- Regulator (DC/DC CONV) circuits  
REC : Colour bar signal.  
PB : Alignment tape (Colour bar).  
— : Unmeasurable or unnecessary to measure.
- Indication on schematic diagram  
Voltage Indications for REC and PB mode on the schematic diagram are as shown below.








**Note:** If the voltages are not indicated on the schematic diagram, refer to the voltage charts.



### 5. Signal path Symbols

The arrows indicate the signal path as follows.

**NOTE :** The arrow is DVC unique object.

-  Playback signal path
-  Playback and recording signal path
-  Recording signal path (including E-E signal path)
-  Capstan servo path
-  Drum servo path

(Example)

-  R-Y Playback R-Y signal path
-  Y Recording Y signal path

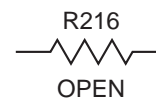
### 6. Indication of the parts for adjustments

The parts for the adjustments are surrounded with the circle as shown below.



### 7. Indication of the parts not mounted on the circuit board

"OPEN" is indicated by the parts not mounted on the circuit board.



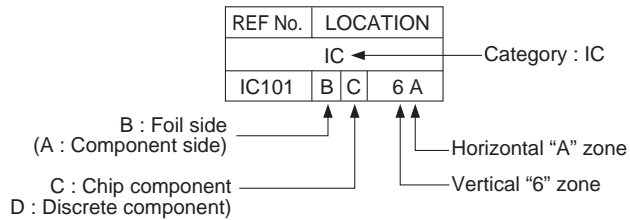
## CIRCUIT BOARD NOTES

### 1. Foil and Component sides

- 1) Foil side (B side) :  
Parts on the foil side seen from foil face (pattern face) are indicated.
- 2) Component side (A side) :  
Parts on the component side seen from component face (parts face) indicated.

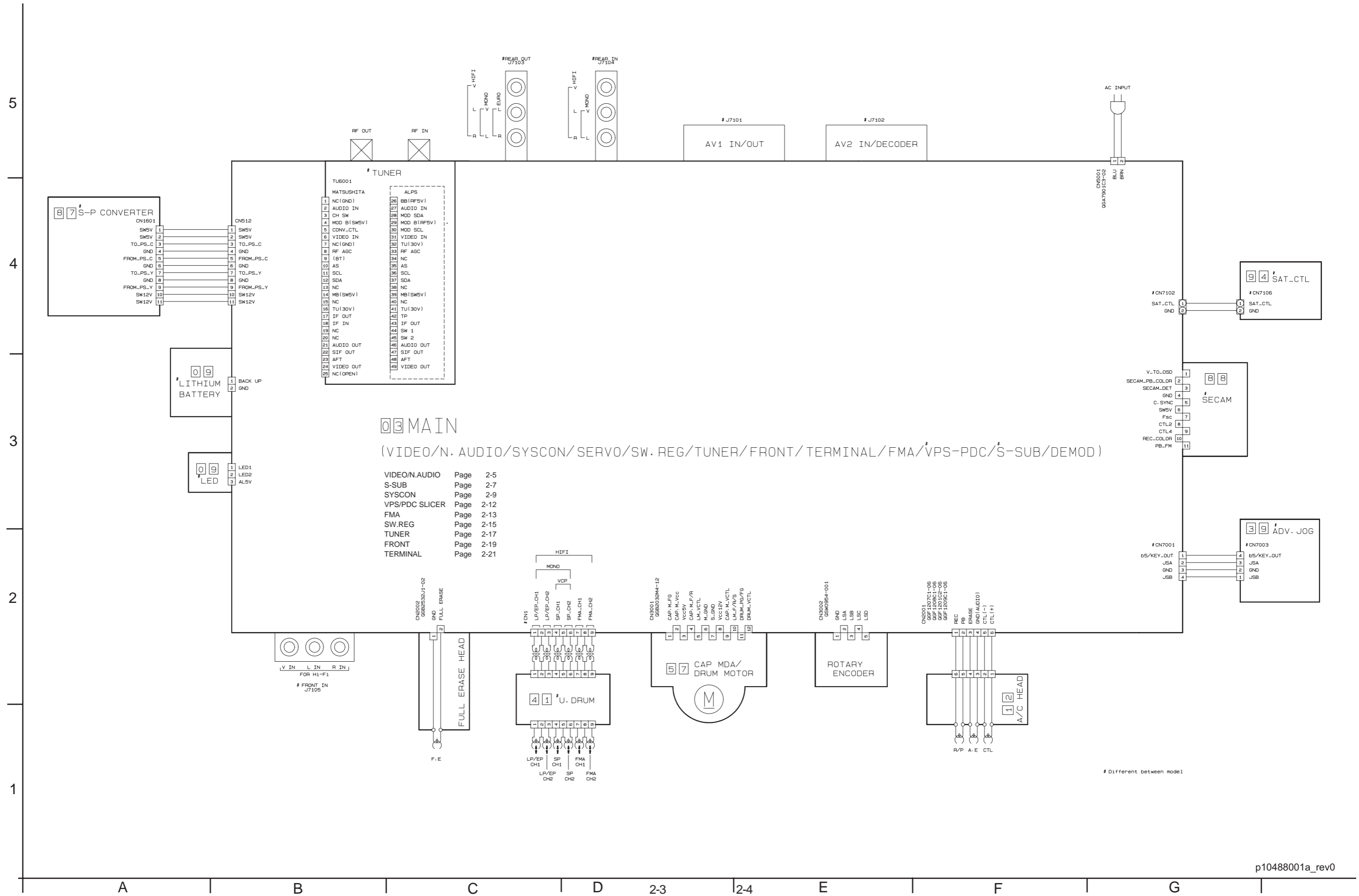
### 2. Parts location guides

Parts location are indicated by guide scale on the circuit board.



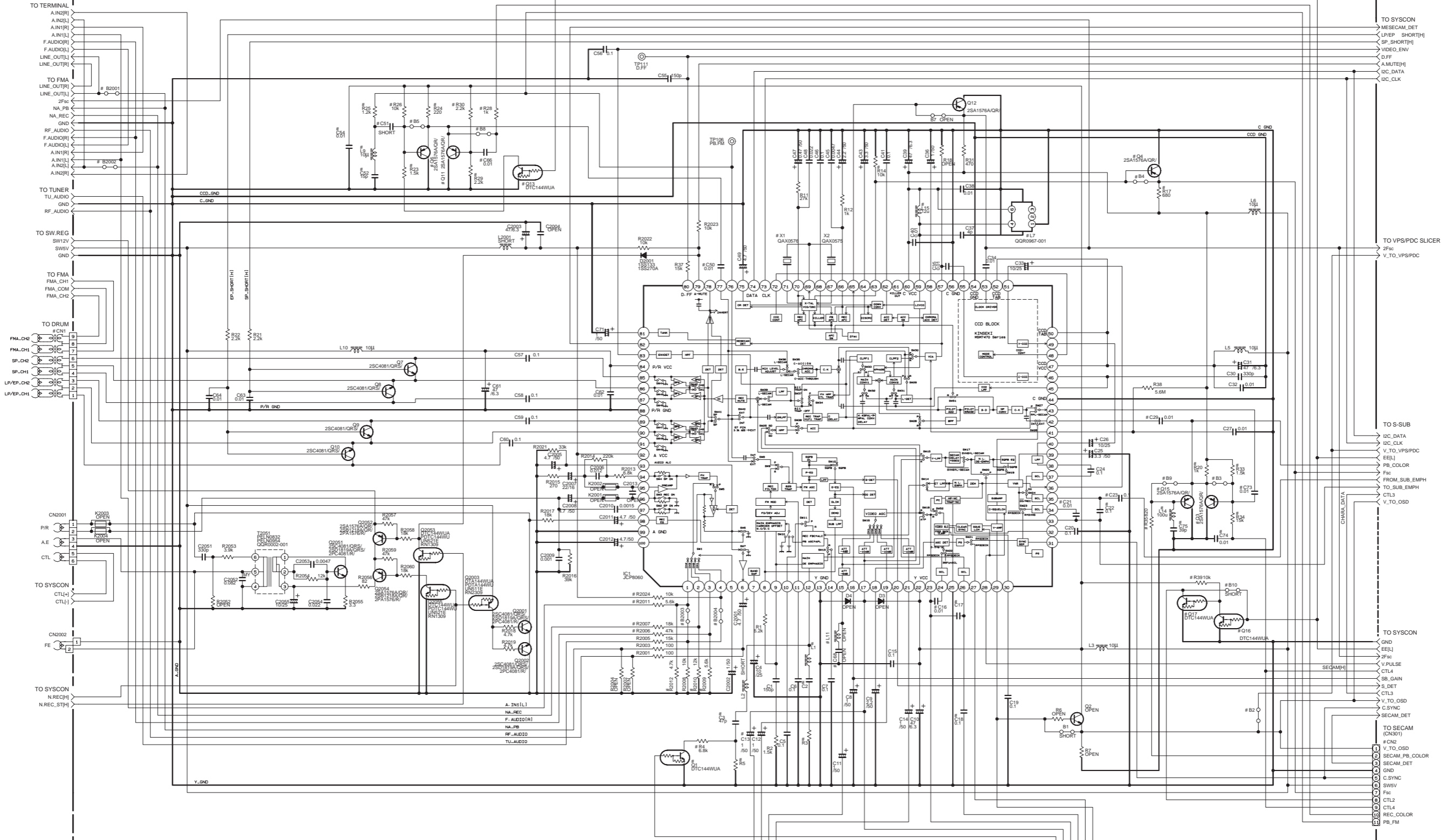
**Note:** For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION Edition 4 No. 82054D (January 1994).

# BOARD INTERCONNECTIONS



# MAIN(VIDEO/N.AUDIO) SCHEMATIC DIAGRAM

03 MAIN(VIDEO/N. AUDIO)



# DIFFERENCE TABLE 1

Working No	B2	B3-B4 R14	B5-R25 C50-C51-C54	L1	R3	C2	C16-C18-C21 C23-C73	C17-C28	L2	Q1-R4 C3
D1	O	X	X	O	SHORT	B.2k	47p	X	O	X
S0	X	O	O	150+	100	4p	O	X	O	O

# DIFFERENCE TABLE 4

Working No	C13
FRONT	O
NO FRONT	X

# DIFFERENCE TABLE 2

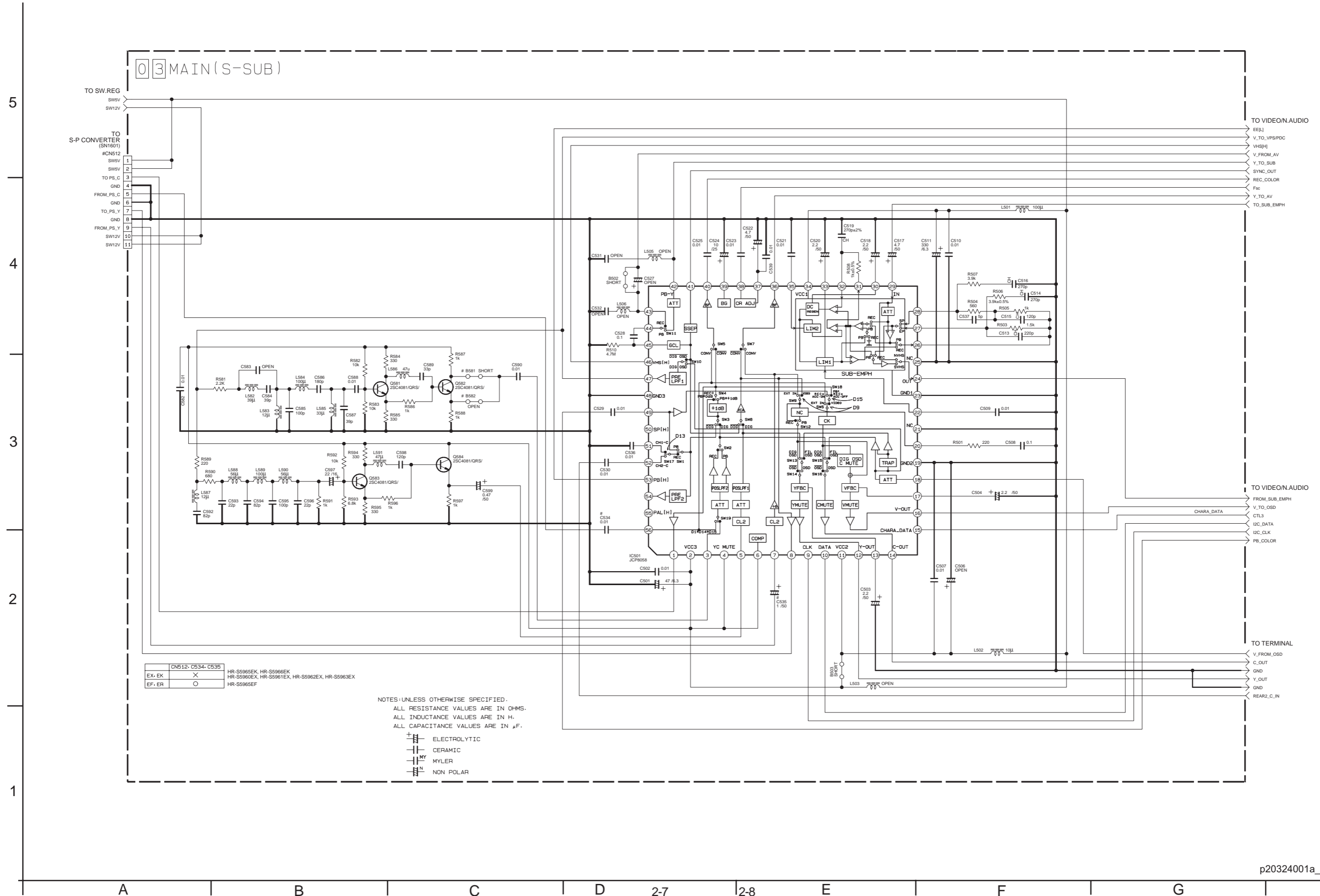
	FRONT IN		REAR IN		NA REC		LINE OUT		TU AUDIO		HF1/HND	
	R2011	R2007	R2012	R2008	R2001	R2002	R2003	R2004	R2024	B2001	B2002	B2004
HF1	X	X	X	X	O	X	X	X	X	X	X	X
ARC/KOREA	X	X	X	X	O	X	X	X	X	X	X	X
FRONT/NEAR	O	O	X	X	O	O	X	X	O	X	O	X
FRONT	O	X	X	X	O	X	X	X	O	X	O	X
REAR	X	O	X	X	O	O	X	X	O	X	O	X

NOTES UNLESS OTHERWISE SPECIFIED.  
 ALL RESISTANCE VALUES ARE IN OHMS.  
 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN P.F.  
 — ELECTROLYTIC  
 — CERAMIC  
 — MYLAR  
 — NON POLAR

# DIFFERENCE TABLE 3

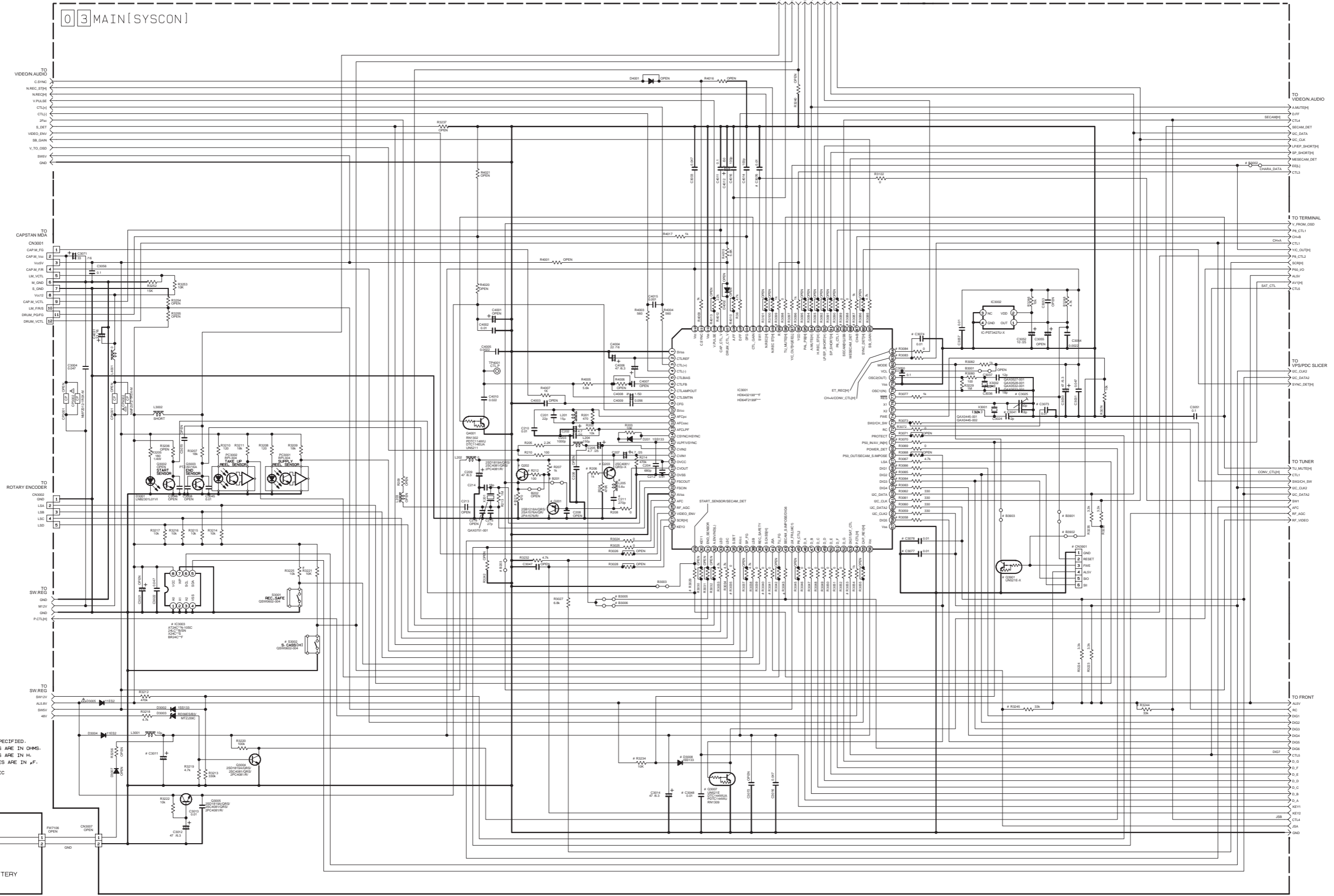
Working No	B8	B9	Q3-R20-R35 R34-C74	Q11-R24-R28 R20-R30-C56	R39	R5	R35	C29	C75-L14	L15	Q6-Q13 R24-R26	L8-C26
D1 & S0	X	X	X	X	X	X	X	X	X	X	X	X
D1 EF	O	O	X	X	X	X	X	X	X	X	X	X
S0 EF	X	O	O	O	O	O	O	O	O	O	O	O

# MAIN(S-SUB) SCHEMATIC DIAGRAM



# MAIN(SYSCON) SCHEMATIC DIAGRAM

5  
4  
3  
2  
1



NOTES UNLESS OTHERWISE SPECIFIED:  
ALL RESISTANCE VALUES ARE IN OHMS.  
ALL INDUCTANCE VALUES ARE IN H.  
ALL CAPACITANCE VALUES ARE IN μF.

- ELECTROLYTIC
- CERAMIC
- MYLAR
- NON POLAR

9 3 LT BATTERY

A B C 2-9 D 2-10 E F G

### DIFFERENCE TABLE OF SYSTEM CONTROL CIRCUIT

# DIFFERENCE TABLE 1: V16 PAL EUROPE

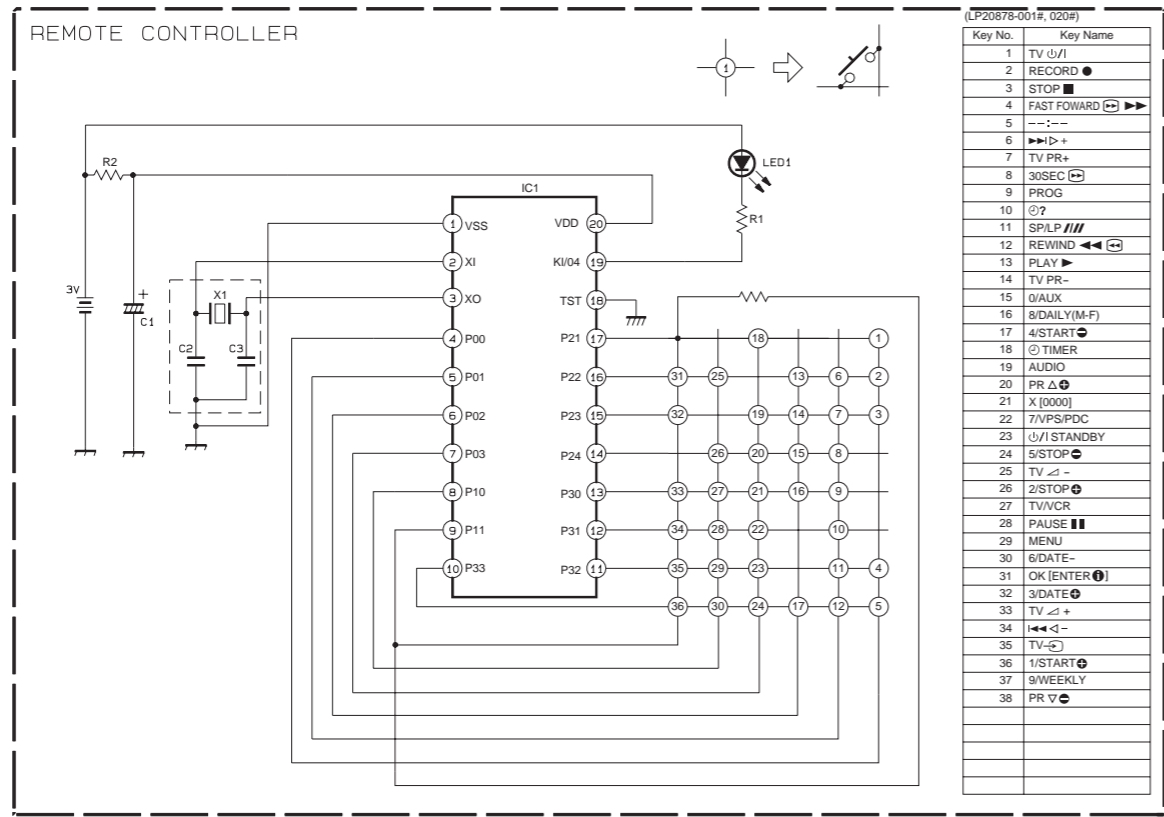
		HR-V600EX	HR-V605EK	HR-V705EK	HR-V605EF	HR-S5960EX	HR-S5960EK	HR-S5960EF
ADV_JOG/ SECAM	R3044, R3045	X	X	O	X	X	X	O
	R3029	X	X	X	O	X	X	O
	R3089	X	X	O	O	X	X	O
SUB-CLK	C3029	O	X	X	X	O	X	X
	C3041	X	O	O	O	O	O	O
S_CASS	R3002	X	X	X	X	O	O	O
	R3023, R3040							
CHARA_DATA	R3096, R3099	X	X	X	X	O	O	O
ET_REC[H]	R3084	X	X	X	X	O	O	O
EEL1/YC_OUT[H]	B3002	X	X	X	O	X	X	X
	R3007	X	X	X	0 Ohm	1k	1k	1k
DECODER	R3067	O	X	X	O	O	X	O
CH1A/CONV_CTL[H]	R3083	1k	X	X	1k	1k	X	1k
SECAM OSD	R3043	X	X	X	0 Ohm	1k	1k	1k
BAT_Volt_DISPLAY	R3053	0 Ohm	0 Ohm	0 Ohm	0 Ohm	1k	1k	1k
LED_DISPLAY	R3056, R3063, R3066	0 Ohm	0 Ohm	0 Ohm	0 Ohm	1k	1k	1k
SECAM OSD	G203, L205	X	X	X	O	X	X	O
	R206, C211							
	B3005	X	X	X	O	X	X	X
	B3006	X	X	X	X	X	X	O
OSD	B201	O	O	O	O	X	X	X
	R207, G201, G202, R211, R212, B203	X	X	X	X	O	O	O
P50/AV_IN[H]	R3034, D3008, G3007	O	O	O	O	X	X	X
	R3070	0 Ohm	0 Ohm	0 Ohm	0 Ohm	1k	1k	1k
ESD	C3046, C3073, C3074, C3076, C3078	X	X	X	X	X	X	X
EEPROM	IC3003	16k	16k	16k	16k	16k	16k	16k

# DIFFERENCE TABLE 2

ON BOARD WRITING
R3039, R3040, R3041
R3221, R3225, R3245,
B3901, B3902, B3903
G3901, C3901

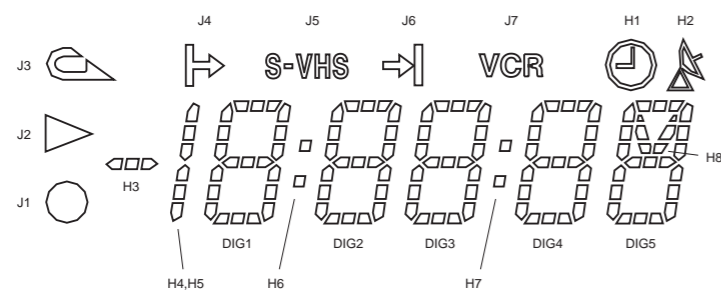
### REMOTE CONTROLLER SCHEMATIC DIAGRAM

NOTES:  
 1. All parts shown in this schematic are critical for safety.  
 2. This schematic is only for reference.  
 Avoid replacing individual parts.  
 Replace the entire unit only.



### FDP GRID ASSIGNMENT AND ANODE CONNECTION

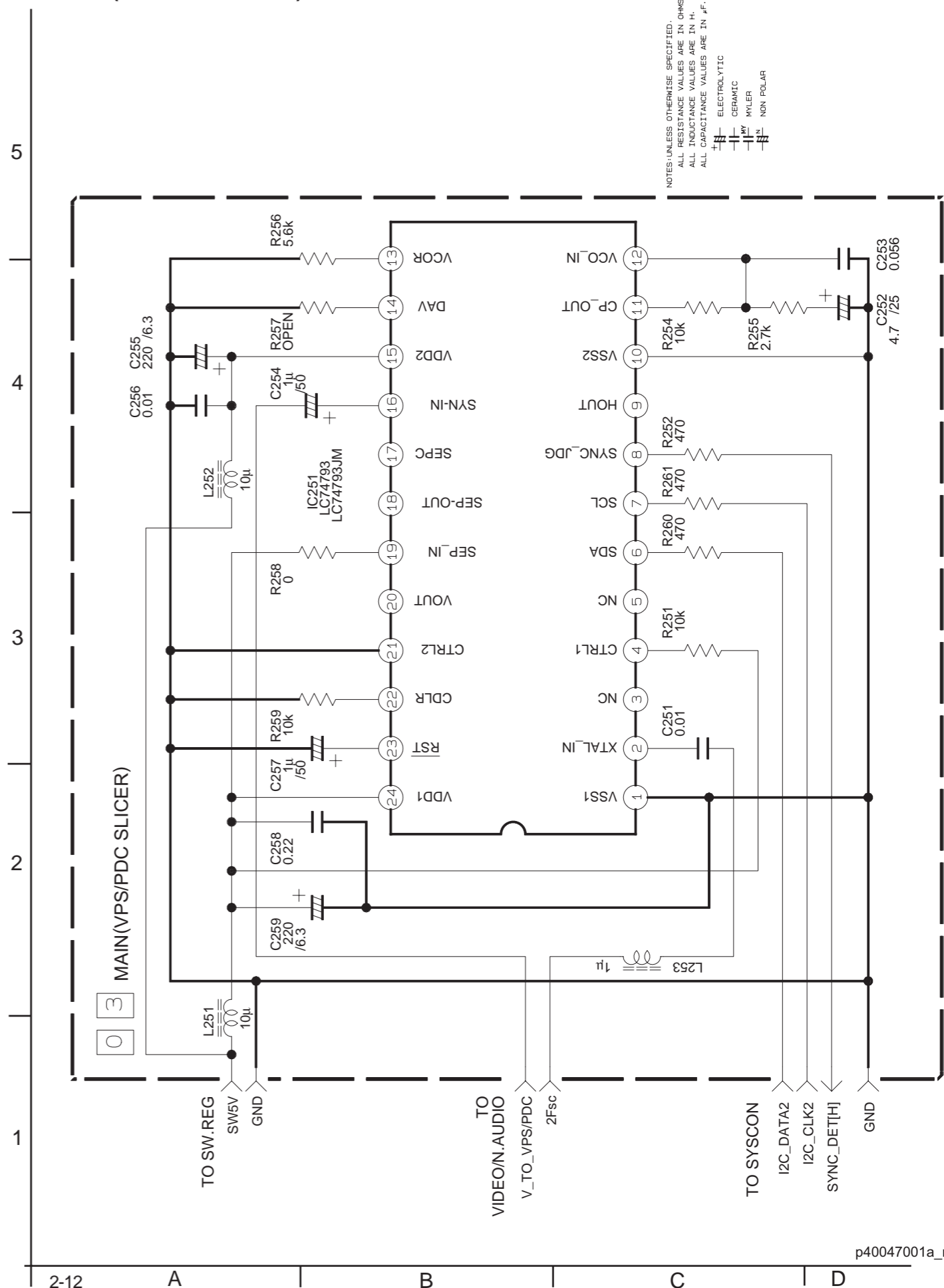
#### GRID ASSIGNMENT



#### ANODE CONNECTION

No.	CONNECTION
1	CATHODE G, J7, H8
2	CATHODE F, J6, H7
3	CATHODE E, J5, H6
4	CATHODE D, J4, H4, H5
5	CATHODE C, J3, H3
6	CATHODE B, J2, H2
7	CATHODE A, J1, H1
8	COMMON ANODE H1-H8
9	COMMON ANODE J1-J7
10	COMMON ANODE (DIGIT 5)
11	COMMON ANODE (DIGIT 4)
12	COMMON ANODE (DIGIT 3)
13	COMMON ANODE (DIGIT 2)
14	COMMON ANODE (DIGIT 1)

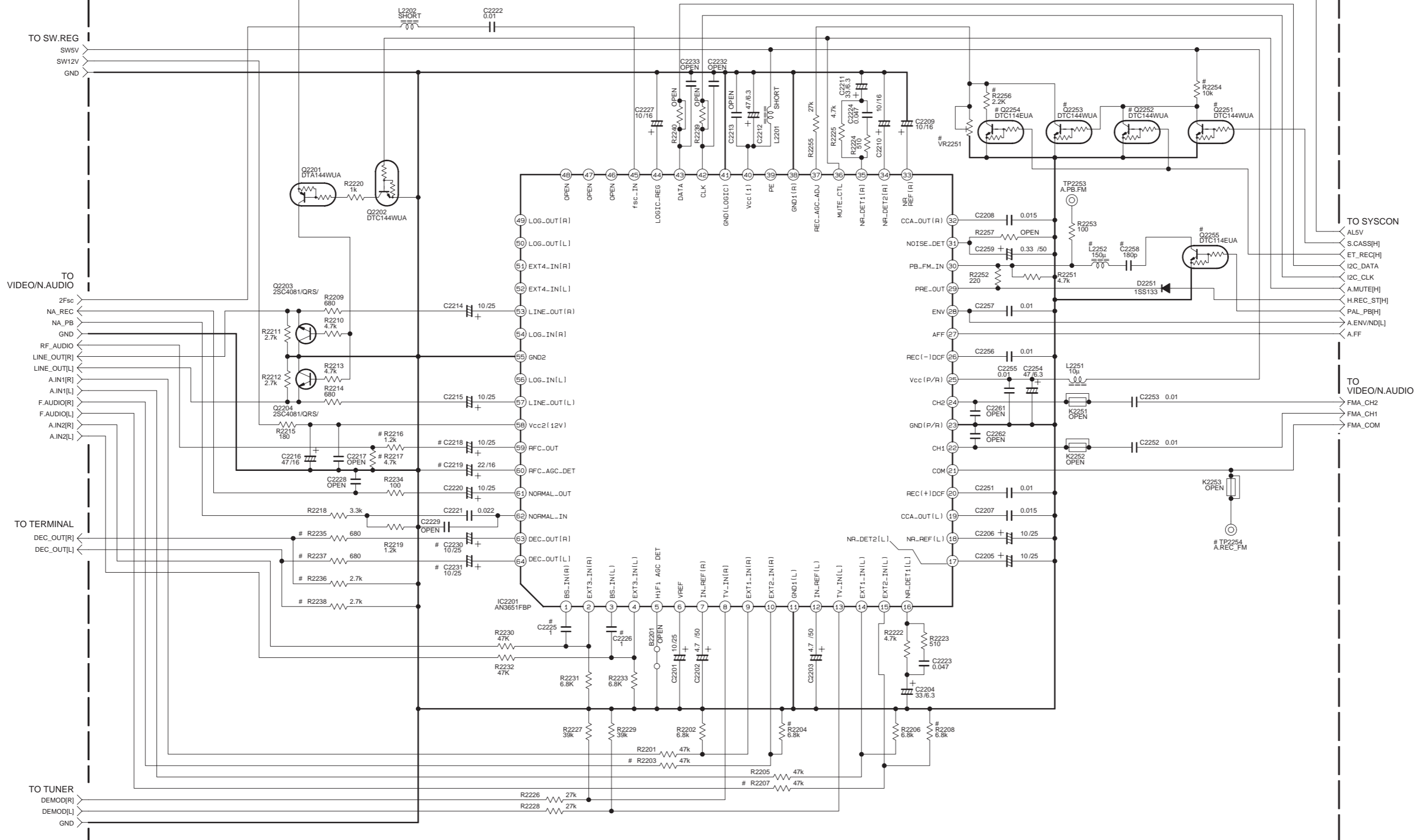
### MAIN(VPS/PDC SLICER) SCHEMATIC DIAGRAM





# MAIN(FMA) SCHEMATIC DIAGRAM

03 MAIN[FMA]



#DIFFERENCE TABLE 1

FRONT INPUT	R2203	R2204	R2207	R2208
YES		O		
NO		X		

#DIFFERENCE TABLE 2

RF OUT	C2218	C2219	R2216	R2217
YES		O		
NO		X		

#DIFFERENCE TABLE 3

CH#	C2225	C2226	C2230	C2231
			R2235-R2239	
YES		O		
NO		X		

#DIFFERENCE TABLE 4

SECAM/MESECAM	Q2255	L2252	C2258
EU/MS		O	
EK		X	

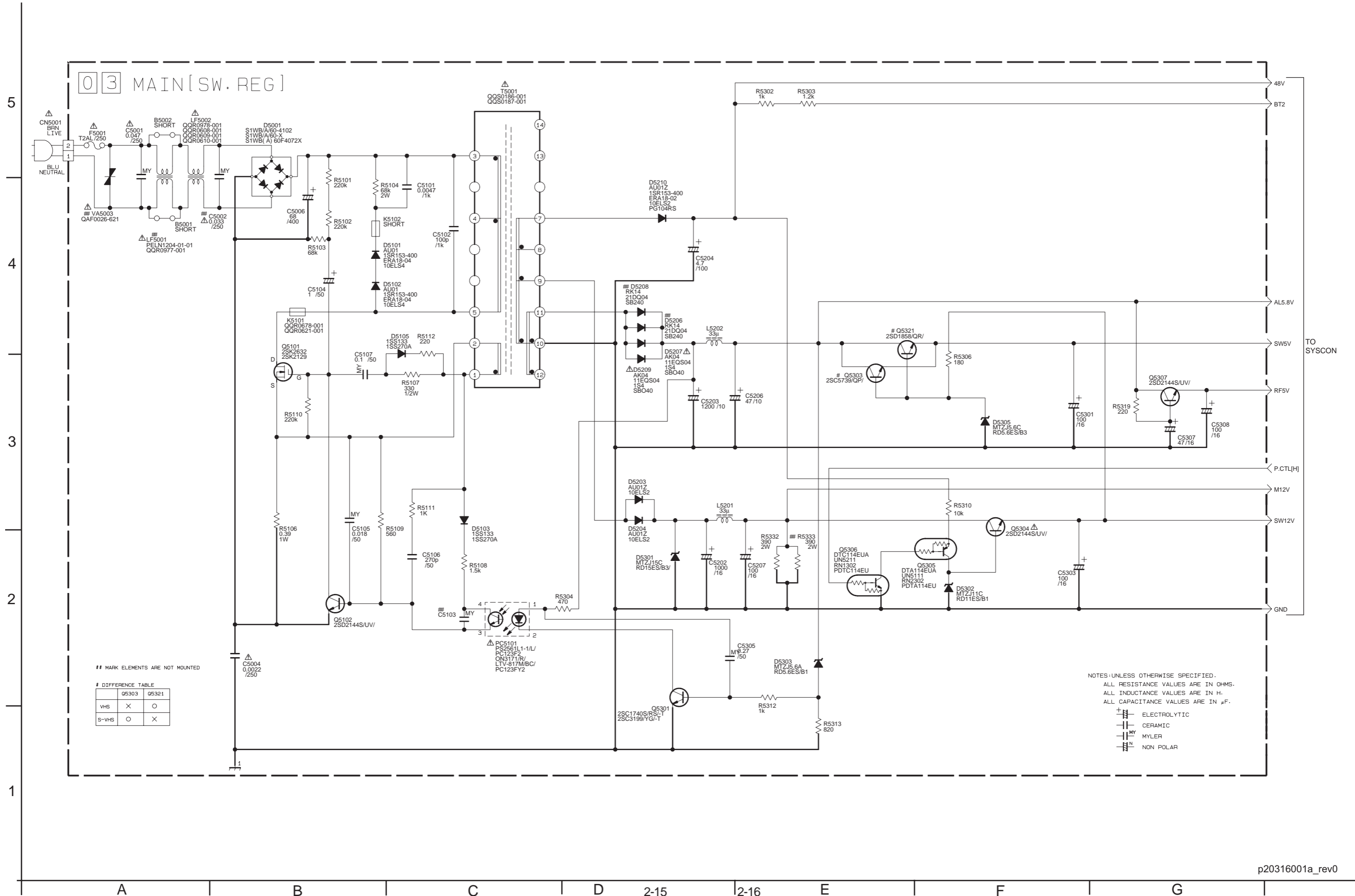
#DIFFERENCE TABLE 5

SVHS	Q2251-Q2254	R2254	R2256	VR2251	TP2254
YES		O		GRE141J-272Y	O
NO		X		SHORT	X

NOTES: UNLESS OTHERWISE SPECIFIED.  
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 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN μF.

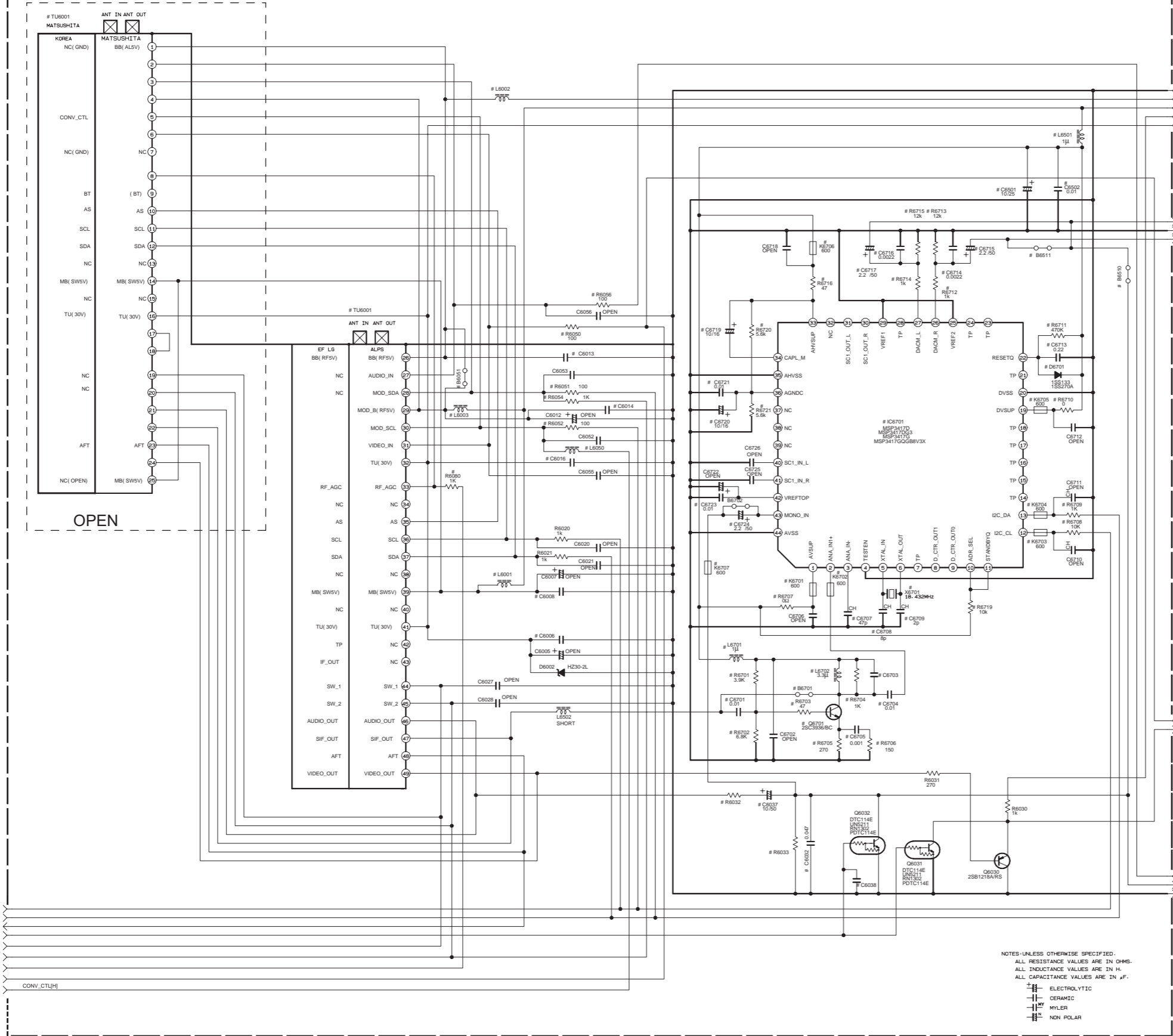
- ELECTROLYTIC
- CERAMIC
- MYLER
- NON POLAR

# MAIN(SW.REG) SCHEMATIC DIAGRAM



MAIN(TUNER) SCHEMATIC DIAGRAM

03 MAIN(TUNER)

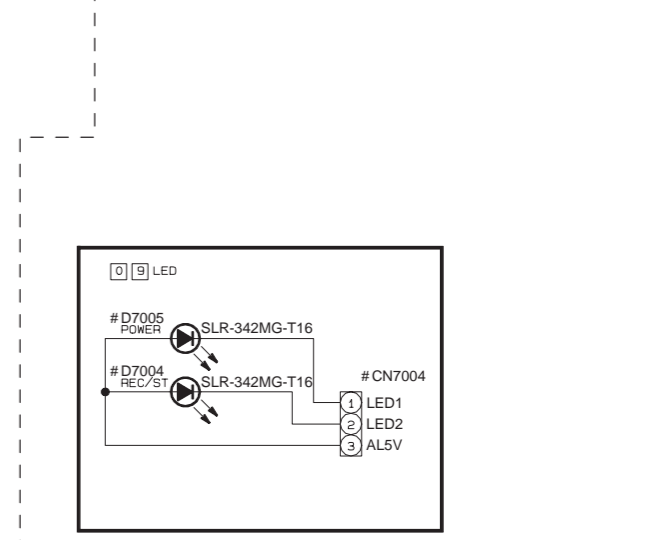
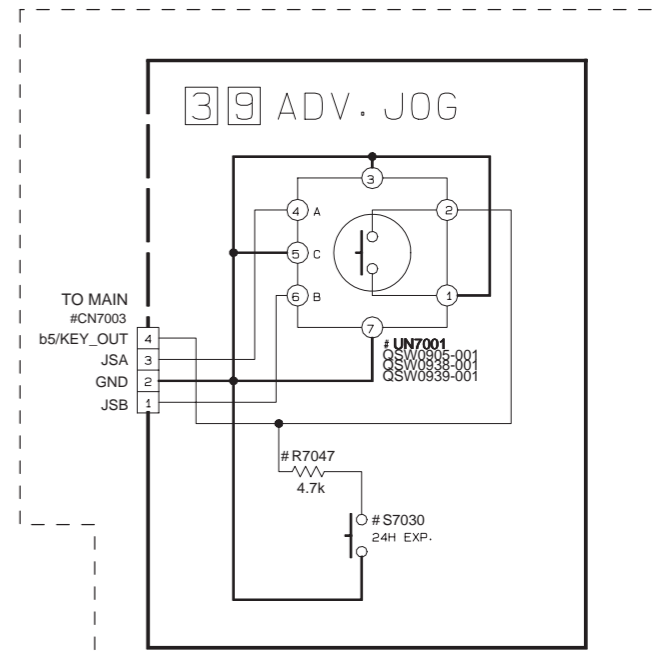
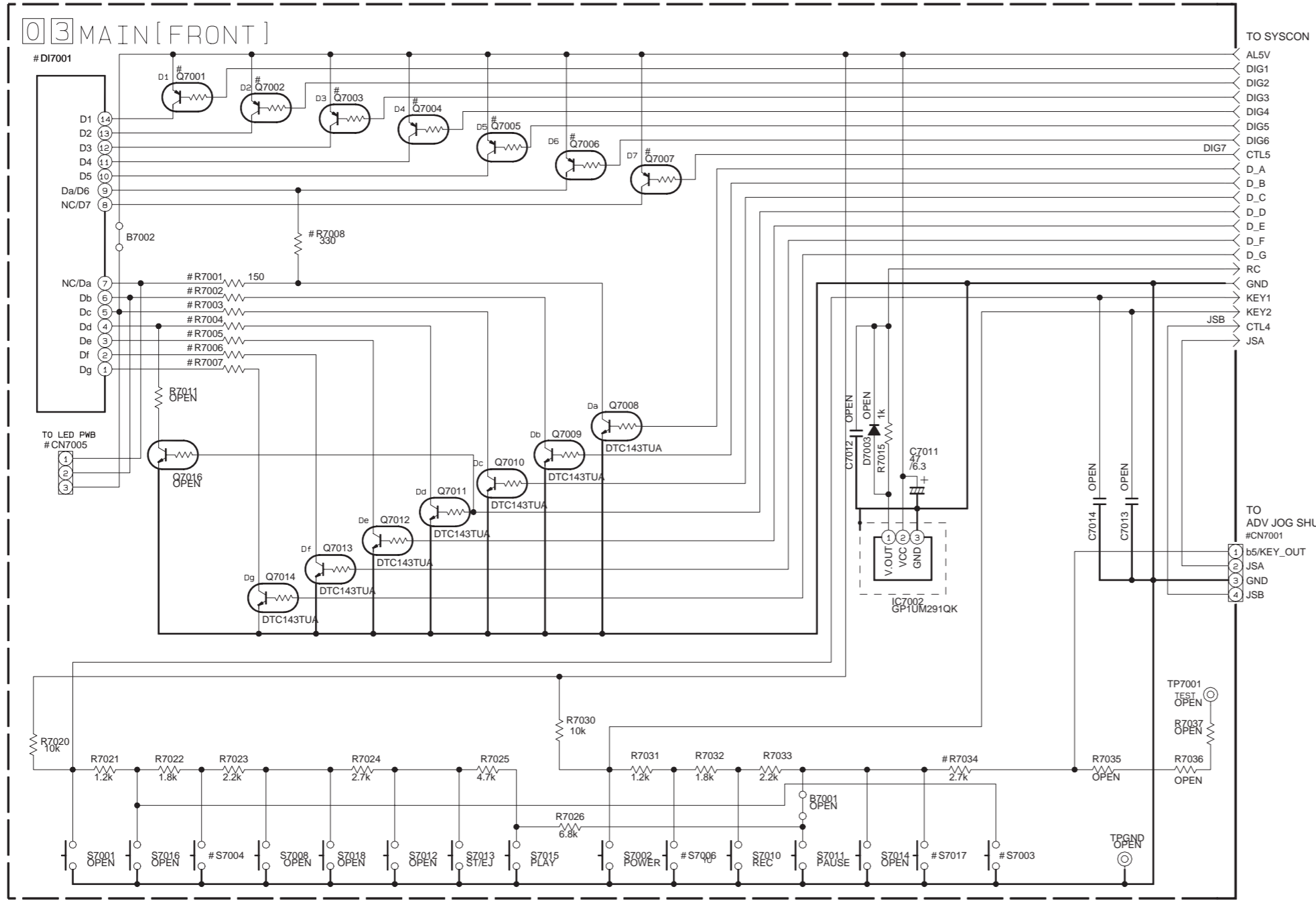


#DIFFERENCE TABLE

TUNER UNIT	TU6001	EX/EX		AS		STEREO DECODER		AH		HR		EF		EV/AA	
		GAU0261	GAU0261	GAU0261	GAU0261	GAU0261	GAU0261	GAU0261	GAU0261	GAU0261	GAU0261	GAU0261	GAU0261	GAU0261	GAU0261
RF CONVERTER	R6051-R6052	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	L6002	1 $\mu$	1 $\mu$	1 $\mu$	SHORT	SHORT	X	1 $\mu$	1 $\mu$	SHORT	X	1 $\mu$	SHORT	X	○
	R6050	○	○	○	○	○	○	○	X	X	○	○	○	○	○
	R6056	○	○	○	○	○	○	○	X	X	○	○	○	○	○
	R6051	○	○	○	○	○	○	○	X	X	○	○	○	○	○
	C6013-C6014	0.01 $\mu$	0.01 $\mu$	0.01 $\mu$	X	X	X	X	X	X	X	X	X	X	X
SWSV	L6001	1 $\mu$	1 $\mu$	1 $\mu$	SHORT	SHORT	SHORT	SHORT	1 $\mu$	SHORT	X	1 $\mu$	SHORT	X	○
	C6006	0.01 $\mu$	0.01 $\mu$	0.01 $\mu$	X	X	X	X	X	X	X	X	X	X	X
TU30V	C6008	0.01 $\mu$	0.01 $\mu$	0.01 $\mu$	0.01 $\mu$	0.01 $\mu$	0.01 $\mu$	0.01 $\mu$	X	X	X	X	X	X	X
	R6080	○	X	X	X	X	X	X	X	X	X	X	X	X	X
RF AGC	R6032	4.7K	4.7K	4.7K	4.7K	SHORT	X	18K	4.7K	4.7K	X	18K	4.7K	1.8K	1.8K
	R6033	1.8K	1.8K	1.8K	1.8K	X	X	X	1.8K	1.8K	X	1.8K	1.8K	1.8K	1.8K
AUDIO DEEMPHASIS	C6032	○	○	○	○	X	X	X	X	X	X	X	X	X	○
	C6037	○	○	○	○	○	○	○	X	X	○	○	○	○	○
MUTE CDT	C6031-C6032	○	X	X	X	X	X	X	X	X	X	X	X	X	X
	C6038	X	X	X	X	X	X	X	X	X	X	X	X	X	X
PRE-AMPLIFIER CIRCUIT	R6701	X	X	○	X	○	○	○	X	X	X	X	X	X	X
	R6702	X	X	○	X	○	○	○	X	X	X	X	X	X	X
	R6703	X	X	X	X	X	X	X	○	X	X	X	X	X	X
	C6701	X	X	○	X	○	○	○	X	X	X	X	X	X	X
	C6702	X	X	180p	X	220p	X	X	X	X	X	X	X	X	X
MONO IN	R6703	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	R6704	○	X	○	X	○	○	○	○	○	○	○	○	○	○
STEREO DECODER	R6705	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	R6706	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	R6707	○	X	○	X	○	○	○	○	○	○	○	○	○	○
	R6708	○	X	○	X	○	○	○	○	○	○	○	○	○	○
	R6709	○	X	○	X	○	○	○	○	○	○	○	○	○	○

NOTES-UNLESS OTHERWISE SPECIFIED.  
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 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN  $\mu$ F.  
 + ELECTROLYTIC  
 - CERAMIC  
 - MYLER  
 - NON POLAR

MAIN(FRONT), LED AND ADV.JOG SCHEMATIC DIAGRAMS



#DIFFERENCE TABLE 1

TOOL	Working No	S7001	S7002	S7003	S7004	S7006	S7008	S7010	S7011	S7012	S7013	S7014	S7015	S7016	S7017	S7018	S7030	R7034 R7047	UN7001 CN7003
400K	D1/S0	-	POWER	PR-	REW	FF	-	REC	REC LINK/ PAUSE	-	ST/EJ	-	PLAY	-	PR+	-	X	X	X
400KA	D1+	-	POWER	TIMER	INSTANT REVIEW	SP/LP	-	REC	REC LINK/ PAUSE	-	ST/EJ	-	PLAY	-	DISPLAY	-	24H EXP	0	0
	S0+	-	POWER	TIMER	COUNTER RESET	SP/LP	-	REC	REC LINK/ PAUSE	-	ST/EJ	-	PLAY	-	DISPLAY	-	24H EXP	0	0

#DIFFERENCE TABLE 2

Working No	DI7001	Q7001- Q7005	Q7006- Q7007	R7008	R7001	R7002- R7007
S0, S0+	LT6-0126M-03	2SB1218A/QR 2SA1576A/QR 2PA1576/R	2SB1218A/QR 2SA1576A/QR 2PA1576/R	X	0	150
D1, D1+	LT6-Y2K16M-J	DTA143TUA-X	OPEN	0	X	330

#DIFFERENCE TABLE 3

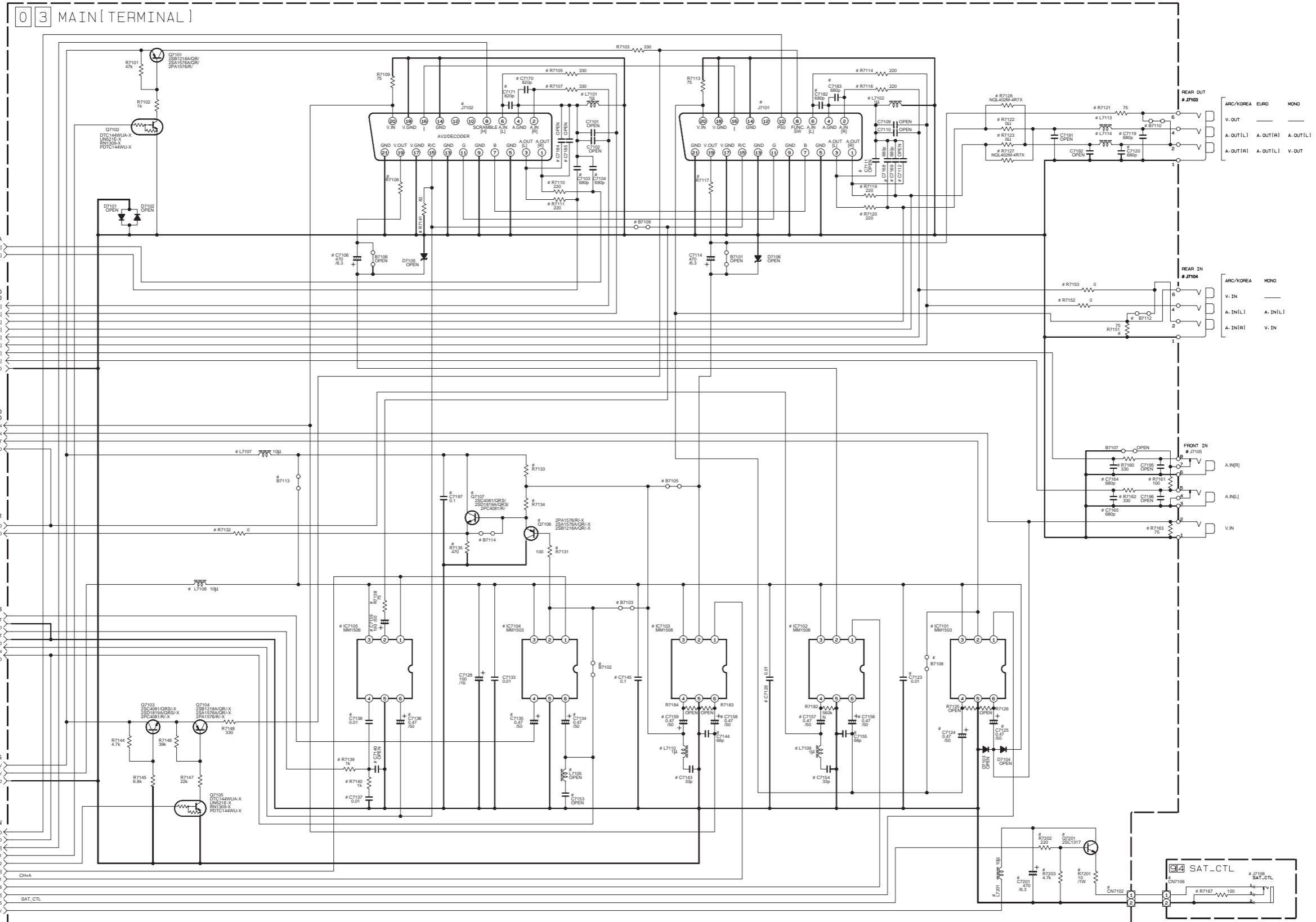
	CN7004 CN7005	D7004 D7005
VCP	0	0
VCR	X	X

NOTES: UNLESS OTHERWISE SPECIFIED.  
ALL RESISTANCE VALUES ARE IN OHMS.  
ALL INDUCTANCE VALUES ARE IN H.  
ALL CAPACITANCE VALUES ARE IN μF.

- ELECTROLYTIC
- CERAMIC
- MYLER
- NON POLAR

NOT USED

# MAIN(TERMINAL)SCHEMATIC DIAGRAM



REFERENCE TABLE 1

VIDEO	IC7101-IC7103-R7106-C7108-C7109-C7143-C7144-C7104-C7105-L7108-L7110	L7107	B7109	B7108	B7107	R7133	R7134	B7105	B7103	B7113	B7114	B7107	B7106	B7104	IC7106-IC7108-B7141-C7109-C7110-C7146-C7147-L7105	IC7104
WB	DECODER	YES	O	X	O	75	GRE141J-471Y	470	O	X	O	X	O	X	O	X
		NO	X	O	O	75	GRE121J-331Y	0	O	X	X	O	X	X	O	X
		YES	O	X	X	68	GRE141J-471Y	470	O	X	O	X	O	X	O	HM1503
S-VHS	DECODER	NO	X	O	X	68	X	0	X	O	X	X	X	O	O	HM1507

REFERENCE TABLE 2

FRONT IN	J7105	IC7101	IC7102	R7101	R7102	B7108
YES(SP)	GN0290-002	O	O	O	X	O
YES(SP)	GN0292-002	O	X	X	X	X
NO	X	X	X	X	O	X

REFERENCE TABLE 3

REAR RCA IN	J7104	L IN	R IN	B7112
SP2N	GN0290-002	O	O	X
ARC/KOREA	NO	X	X	X

REFERENCE TABLE 4

REAR RCA OUT	J7103	R7108	R7109	L7113	R7103	R7107	C7120	L7114	B7110
EX/RE/EP	YES	X	O	1a	X	O	O	1a	X
NO	X	X	X	X	X	X	X	X	X
SP2N	GN0290-002	O	X	SHORT	O	X	O	SHORT	X
ARC/KOREA	SP2N	GN0290-002	O	X	SHORT	X	X	X	X

REFERENCE TABLE 5

SCART IN/OUT	AV1	AV2	AV3/DECODER	AV1 IN/OUT	AV2/DECODER	AV1 IN/OUT
EX/EP	J7101	J7102	R7107	R7111	R7113	R7114
NO	O	O	O	O	O	O
EX/EP	WITH DCH	O	O	O	O	O
EX/EP	WITHOUT DCH	O	O	O	O	O
ARC/KOREA	X	X	X	X	X	X

REFERENCE TABLE 6

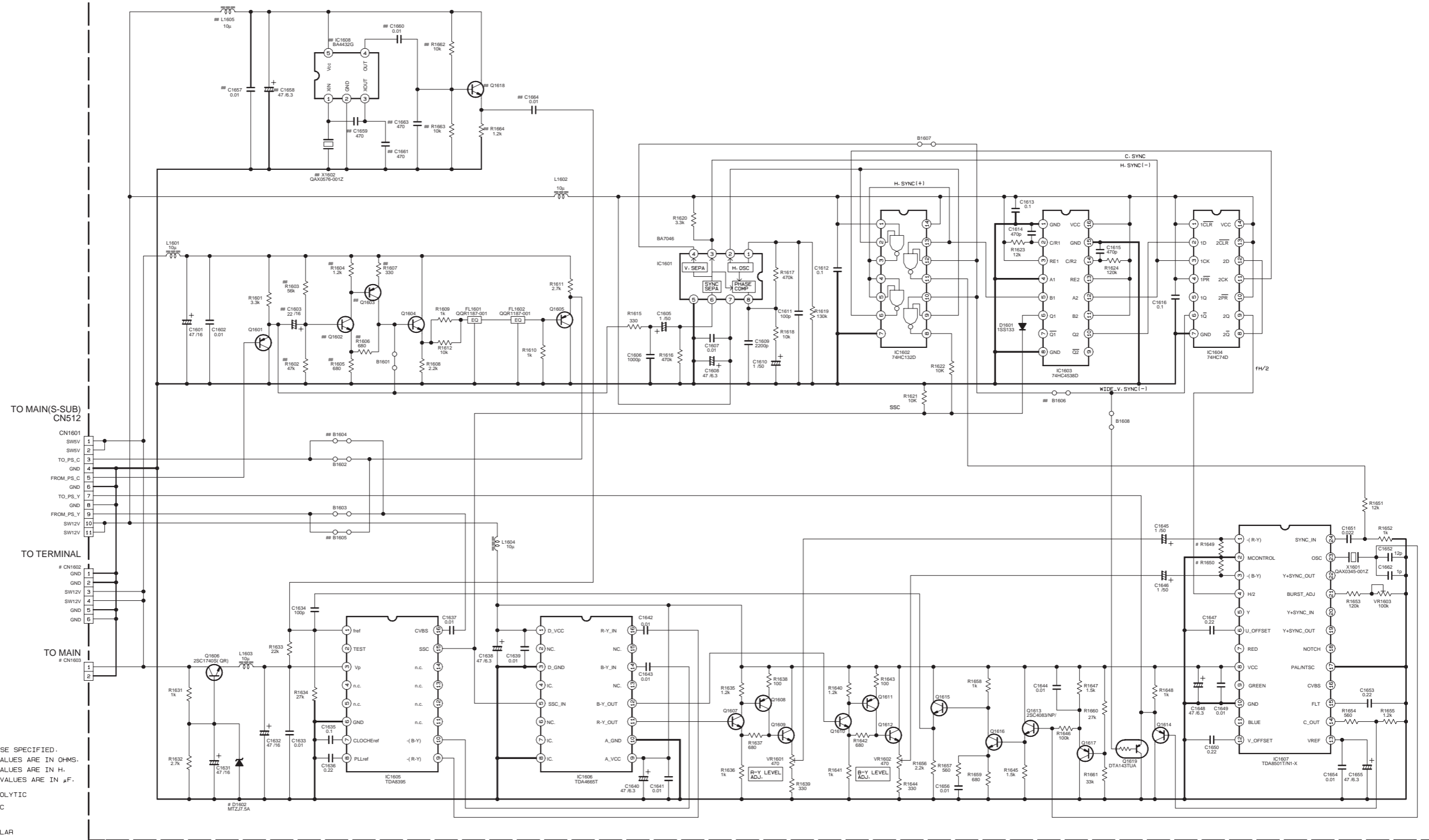
SAT_CTL	J7109	J7110	J7111	J7112
YES	O	O	O	O
NO	X	X	X	X

NOTES: UNLESS OTHERWISE SPECIFIED:  
 ALL RESISTANCE VALUES ARE IN OHMS.  
 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN μF.

ELECTROLYTIC  
 CERAMIC  
 MICHA  
 NON POLAR

**S-P CONVERTER SCHEMATIC DIAGRAM [HR-S5965EF]**

**87 S-P CONVERTER**



NOTES: UNLESS OTHERWISE SPECIFIED,  
 ALL RESISTANCE VALUES ARE IN OHMS.  
 ALL INDUCTANCE VALUES ARE IN H.  
 ALL CAPACITANCE VALUES ARE IN  $\mu$ F.

ELECTROLYTIC  
 CERAMIC  
 MYLER  
 NON POLAR

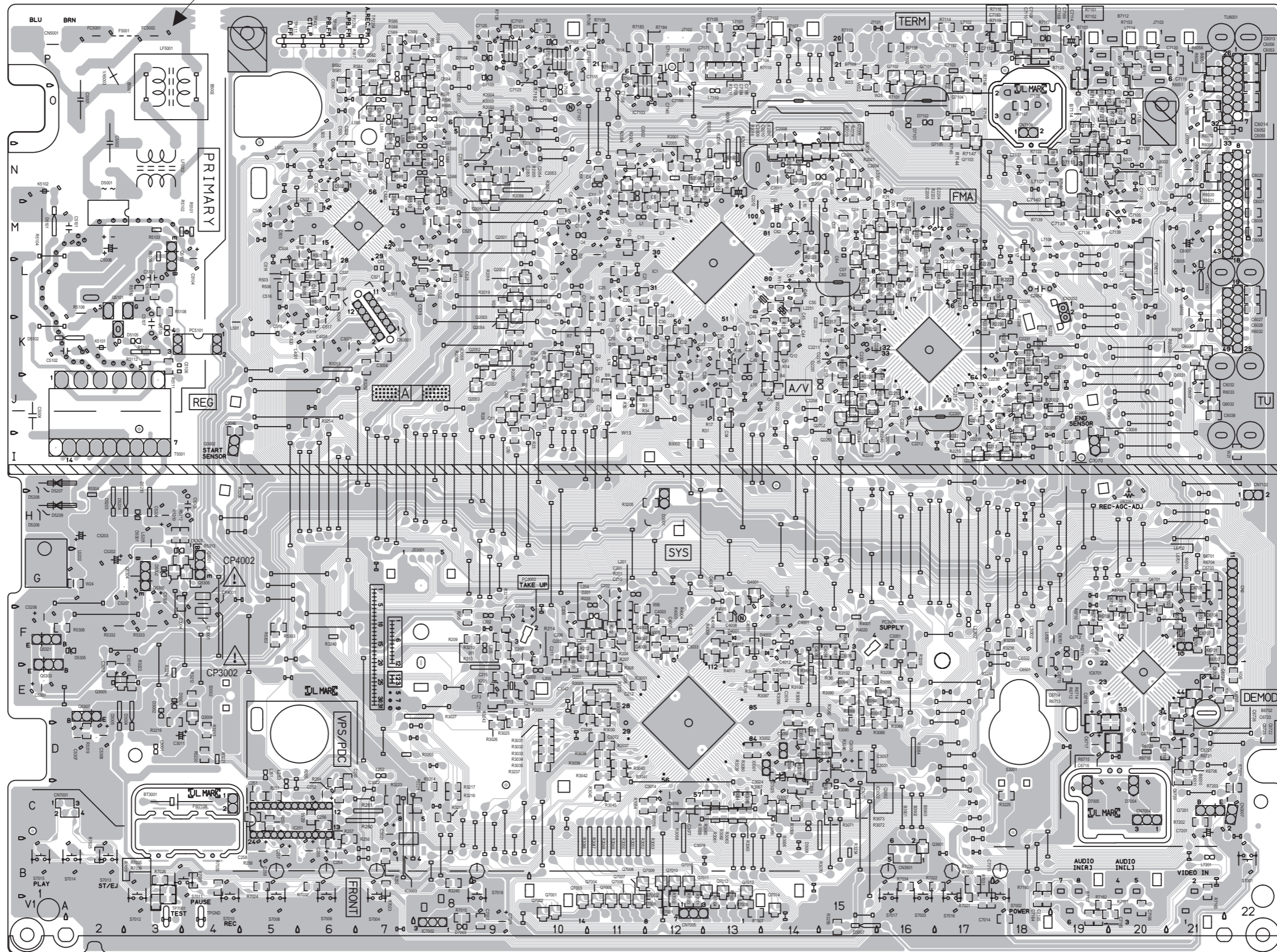
# MARK ELEMENTS ARE NOT MOUNTED



■ MAIN CIRCUIT BOARD

<03> MAIN  
LPB10189-001C

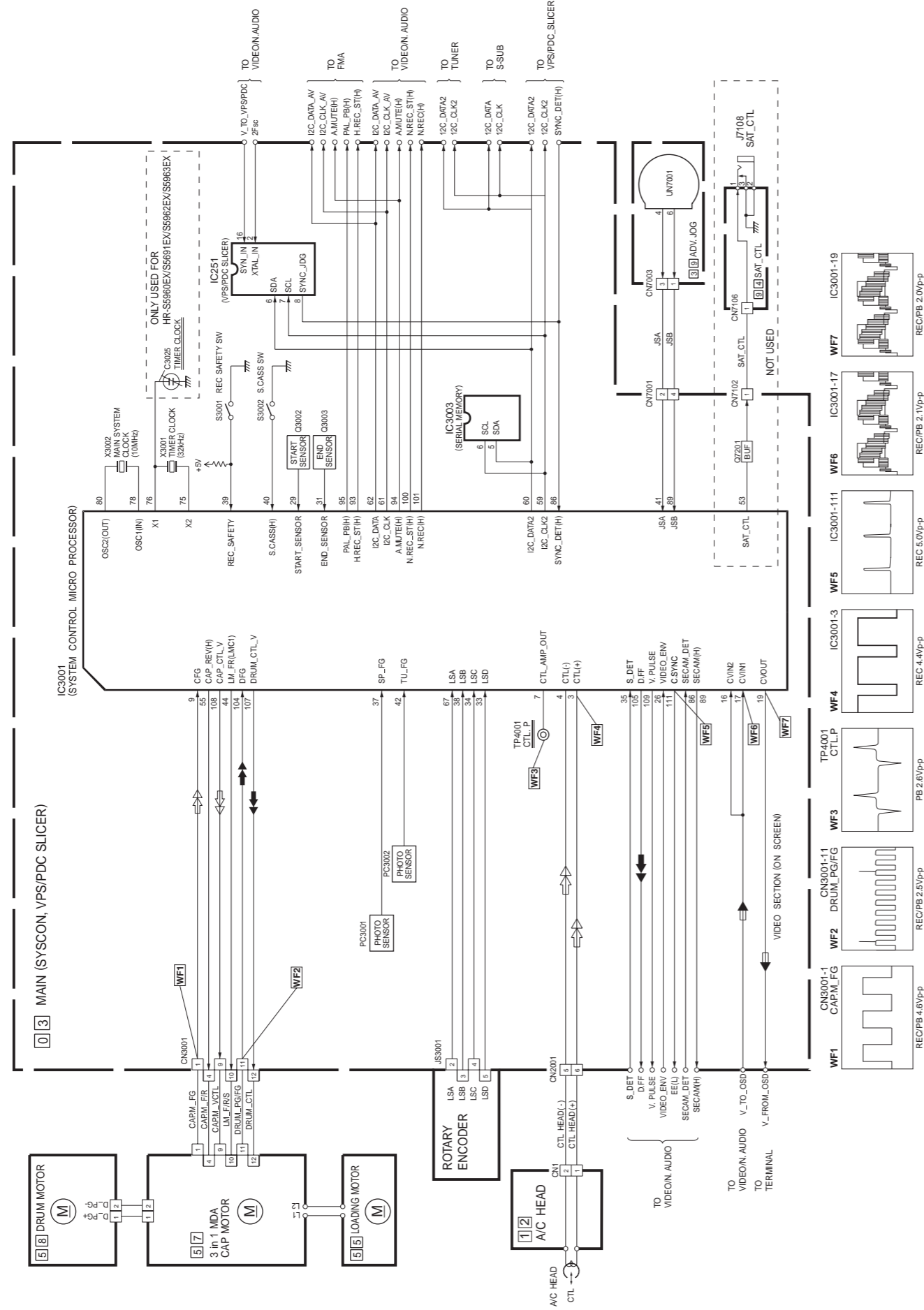
DANGEROUS VOLTAGE



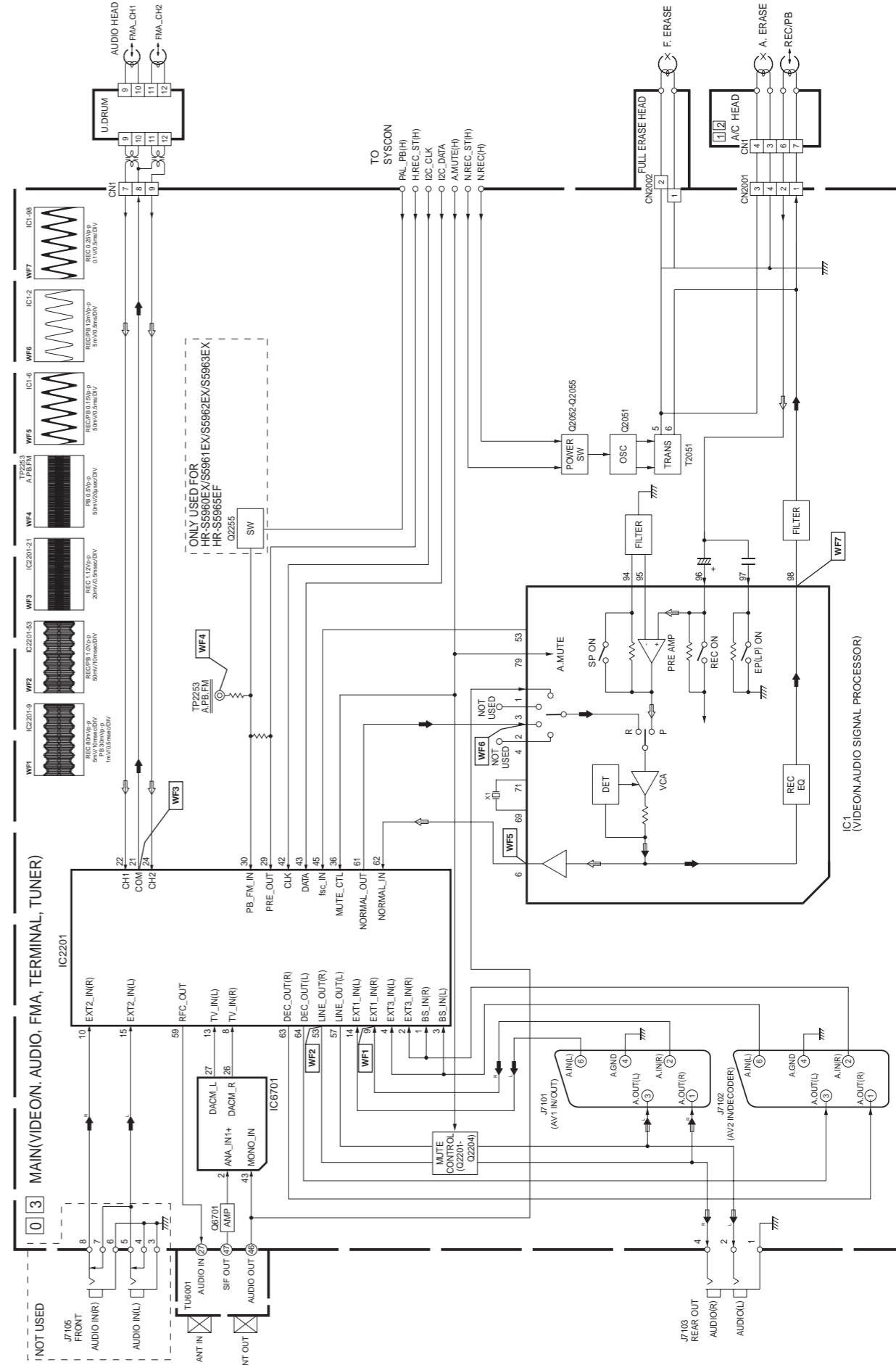




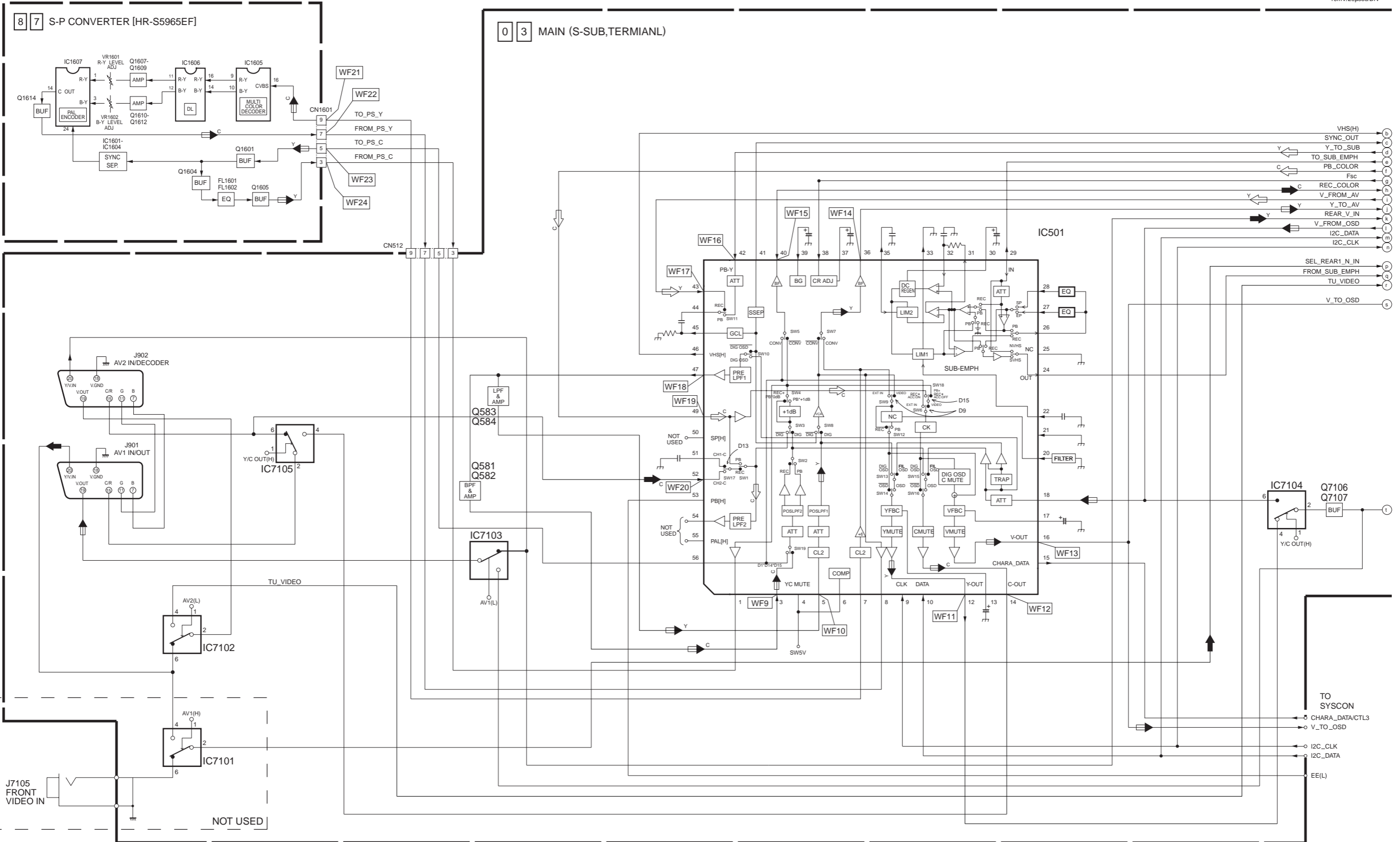
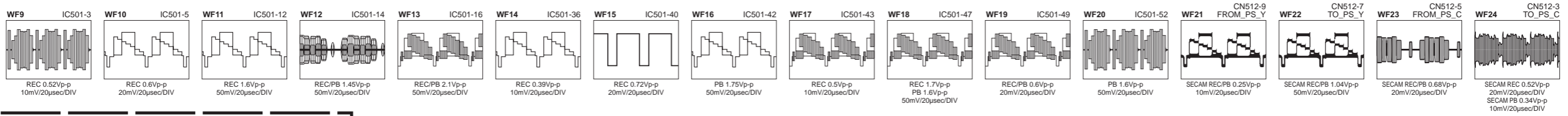
# SYSTEM CONTROL BLOCK DIAGRAM



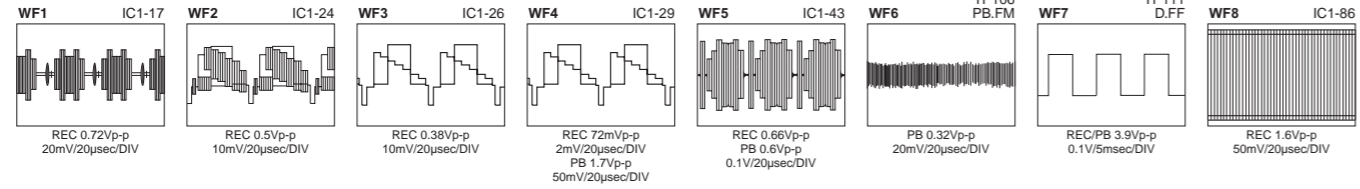
# AUDIO BLOCK DIAGRAM



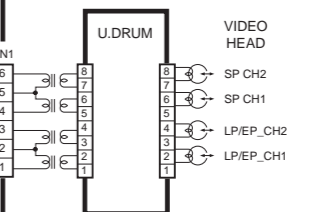
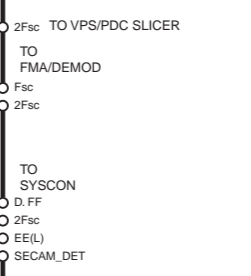
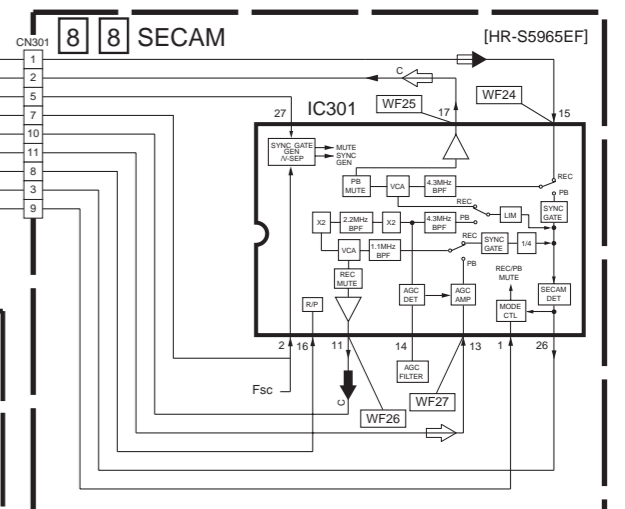
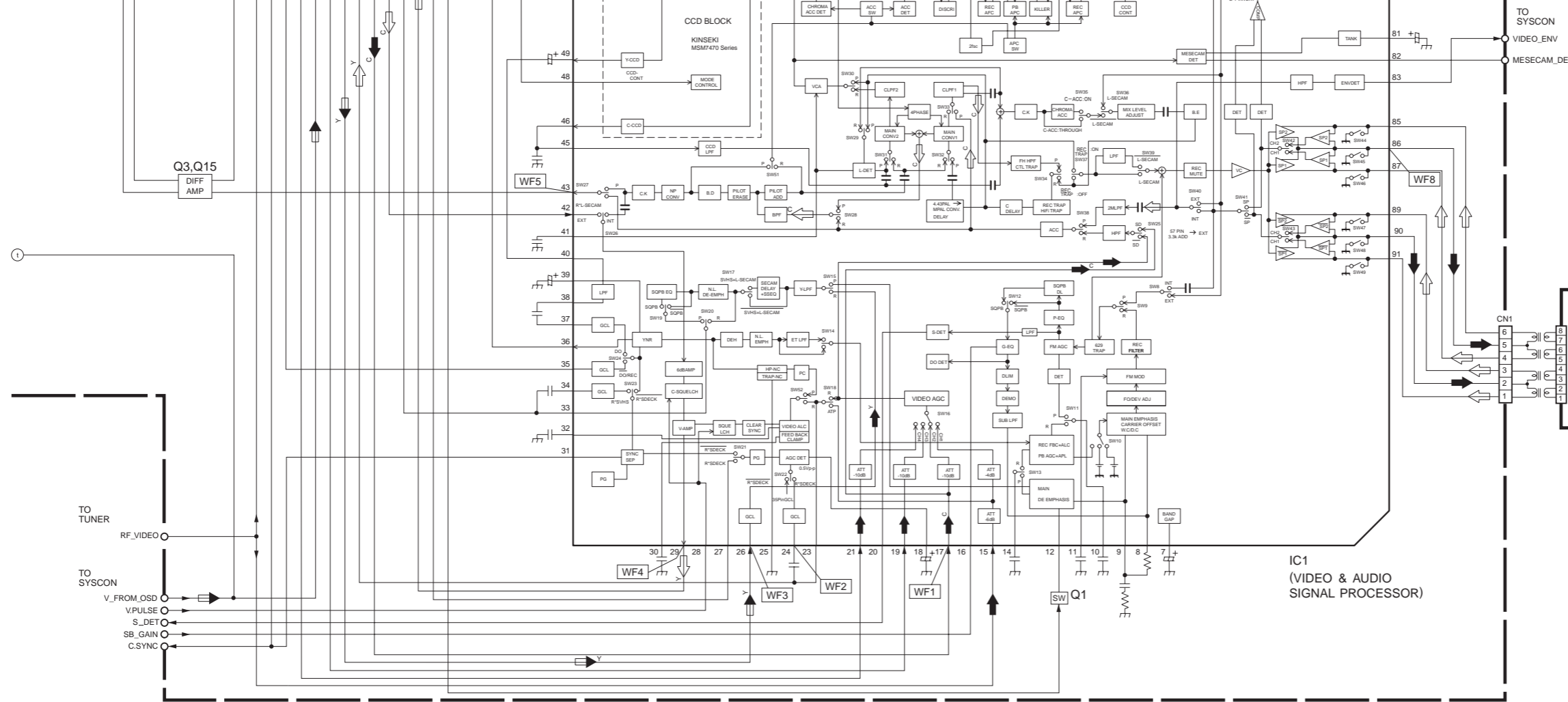
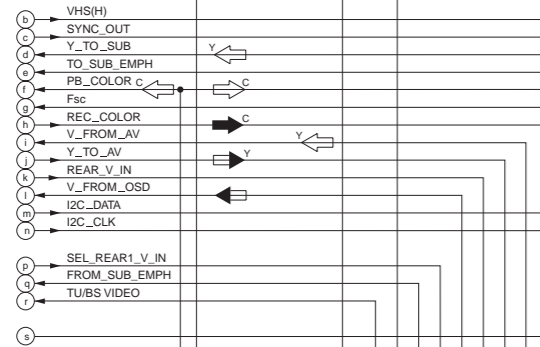
# VIDEO BLOCK DIAGRAM(1)



**VIDEO BLOCK DIAGRAM(2)**



**0 3 MAIN (VIDEO/N. AUDIO, TERMINAL)**





**JVC**

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