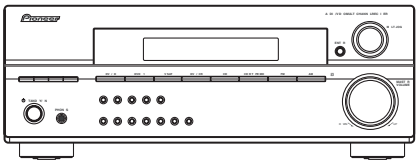
Pioneer sound.vision.soul

Service Manual



VSX-415-K

ORDER NO.
RRV3091

AUDIO/VIDEO MULTI-CHANNEL RECEIVER

VSX-415-K
VSX-415-S

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

Model	Type	Power Requirement	Remarks
VSX-415-K	KUCXJ	AC120V	
VSX-415-S	KUCXJ	AC120V	

For details, refer to "Important Check Points for Good Servicing".

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936

T-ZZK MAR. 2005 printed in Japan

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

This product contains lead in solder and certain electrical parts contain chemicals which are known to the state of California to cause cancer, birth defects or other reproductive harm.

Health & Safety Code Section 25249.6 – Proposition 65

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.

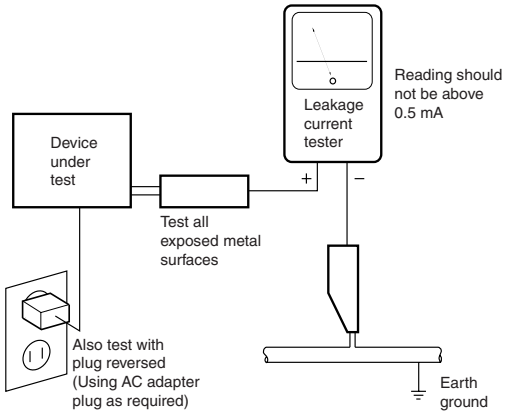
(FOR USA MODEL ONLY)

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 does 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.

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

CONTENTS

1. SPECIFICATIONS

Amplifier section

- **Continuous power output (stereo)**

Front:
VSX-415. . . . . 120 W (1kHz, THD 0.2%, 8 Ω) [1]

- **Continuous power output (surround)**

VSX-415 model:
Front. . . . . 120 W per channel (1kHz, 10%, 8 Ω)
Center . . . . . 120 W (1kHz, 10%, 8 Ω)
Surround . . . . . 120 W per channel
(1kHz, 10%, 8 Ω)

Audio section

- **Input (Sensitivity/Impedance)**

CD, DVR/VCR, CD-R/TAPE/MD,
DVD/LD, TV/SAT . . . . . 200 mV/47 kΩ

- **Frequency response**

CD, DVR/VCR, CD-R/TAPE/MD, DVD/LD,
TV/SAT . . . . . 5 Hz to 100,000 Hz $^{+0}_{-3}$ dB

- **Output (Level/Impedance)**

DVR/VCR REC, CD-R/TAPE/
MD REC. . . . . .200 mV/2.2 kΩ

- **Tone control**

Bass. . . . . .± 6 dB (100 Hz)
Treble. . . . . .± 6 dB (10 kHz)
Loudness. . . . . +10 dB/+5 dB (100 Hz/10 kHz)
(at volume level –50 dB)

- **Signal-to-Noise Ratio (IHF, short circuited, A network)**

CD, DVR/VCR, CD-R/TAPE/MD,
DVD/LD, TV/SAT. . . . . .96 dB

- **Signal-to Noise Ratio [EIA, at 1 W (1 kHz)]**

CD, DVR/VCR, CD-R/TAPE/MD,
DVD/LD, TV/SAT. . . . . .79 dB

Video Section

- **Input (Sensitivity/Impedance)**

DVR/VCR, DVD/LD, TV/SAT. . . . . .1 Vp-p/75 Ω

- **Output (Level/Impedance)**

DVR/VCR, MONITOR OUT. . . . . .1 Vp-p/75 Ω

- **Frequency response**

DVR/VCR, DVD/LD,
TV/SAT ⇨ MONITOR. . . . . .5 Hz to 7 MHz $^{+0}_{-3}$ dB
Signal-to-Noise Ratio. . . . . .55 dB
Crosstalk. 50dB

Note

1 Continuous average power output of 110 watts* per channel, min., at 8ohms, from 20 Hz to 20,000 Hz with no more than 0.2%** total harmonic distortion (front).
* Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifiers.
** Measured by Audio Spectrum Analyzer.

- **FM Tuner Section**

Frequency Range. . . . . .87.5 MHz to 108 MHz
Usable Sensitivity . . . . . Mono:13.2 dBf, IHF (1.3 µV/ 75 Ω)
50 dB Quieting Sensitivity. . . . . Mono: 20.2 dB Stereo: 38.6 dBf
Signal-to-Noise Ratio. . . Mono: 73 dB (at 85 dBf) Stereo: 70 dB (at 85 dBf)
Distortion . . . . . Stereo: 0.5 % (1 kHz)
Alternate Channel Selectivity. . . . . .60 dB (400 kHz)
Stereo Separation . . . . . 40 dB (1 kHz)
Frequency Response. . . . . .30 Hz to 15 kHz (±1 dB)
Antenna Input (DIN) . . . . . 75 Ω unbalanced

AM Tuner Section

Frequency Range. . . . . 530 kHz to 1,700 kHz
Sensitivity (IHF, Loop antenna). . . . . .350 µV/m
Signal-to-Noise Ratio. . . . . .50 dB
Antenna . . . . . .Loop antenna

Miscellaneous

Power requirements . . . . . .AC 120V / 60Hz
Power consumption:
VSX-415. . . . . .260 W / 340 VA

In standby. . . . . .0.5 W
Dimensions:
VSX-415. . . .16 9/16 (W) x 6 1/4 (H) x 15 9/16 (D) in.
420 (W) x 158 (H) x 394.5 (D) mm

Weight (without package)
VSX-415. . . . . 18.1 lb (8.5 kg)

Furnished Parts

AM loop antenna. 1
FM wire antenna 1
Dry cell batteries (AA size IEC R6) 2
Remote control 1
Warranty Card 1
Operating instructions

Manufactured under license from Dolby Laboratories. "Dolby", "Pro Logic", "Surround EX", and the double-D symbol are trademarks of Dolby Laboratories.

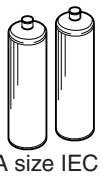
"DTS" ,"DTS-ES Extended Surround" and "Neo:6" are trademarks of Digital Theater Systems, Inc.

Accessories

Remote control unit
(XXD3067)

AM loop antenna
(ATB7013)

FM wire antenna
(ADH7030)

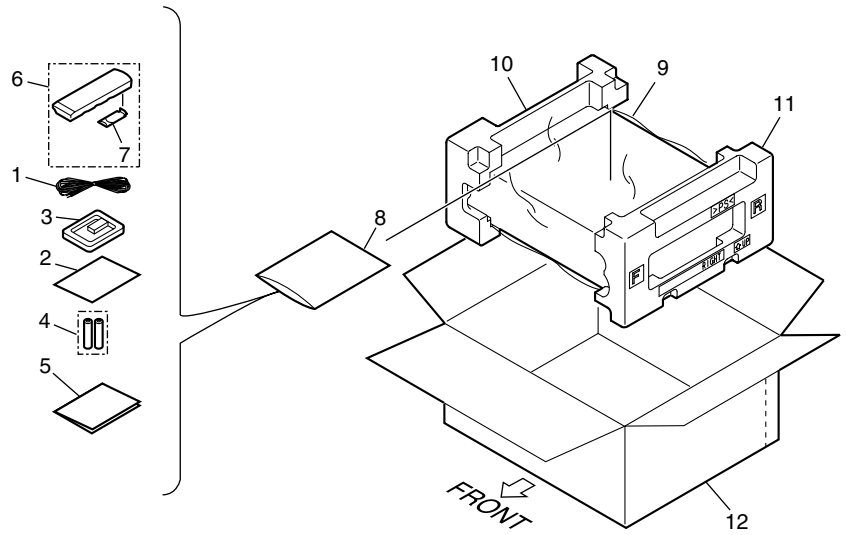


AA size IEC R6
Dry cell batteries (x2)

2. EXPLODED VIEWS 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.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

2.1 PACKING



(1) PACKING SECTION PARTS LIST

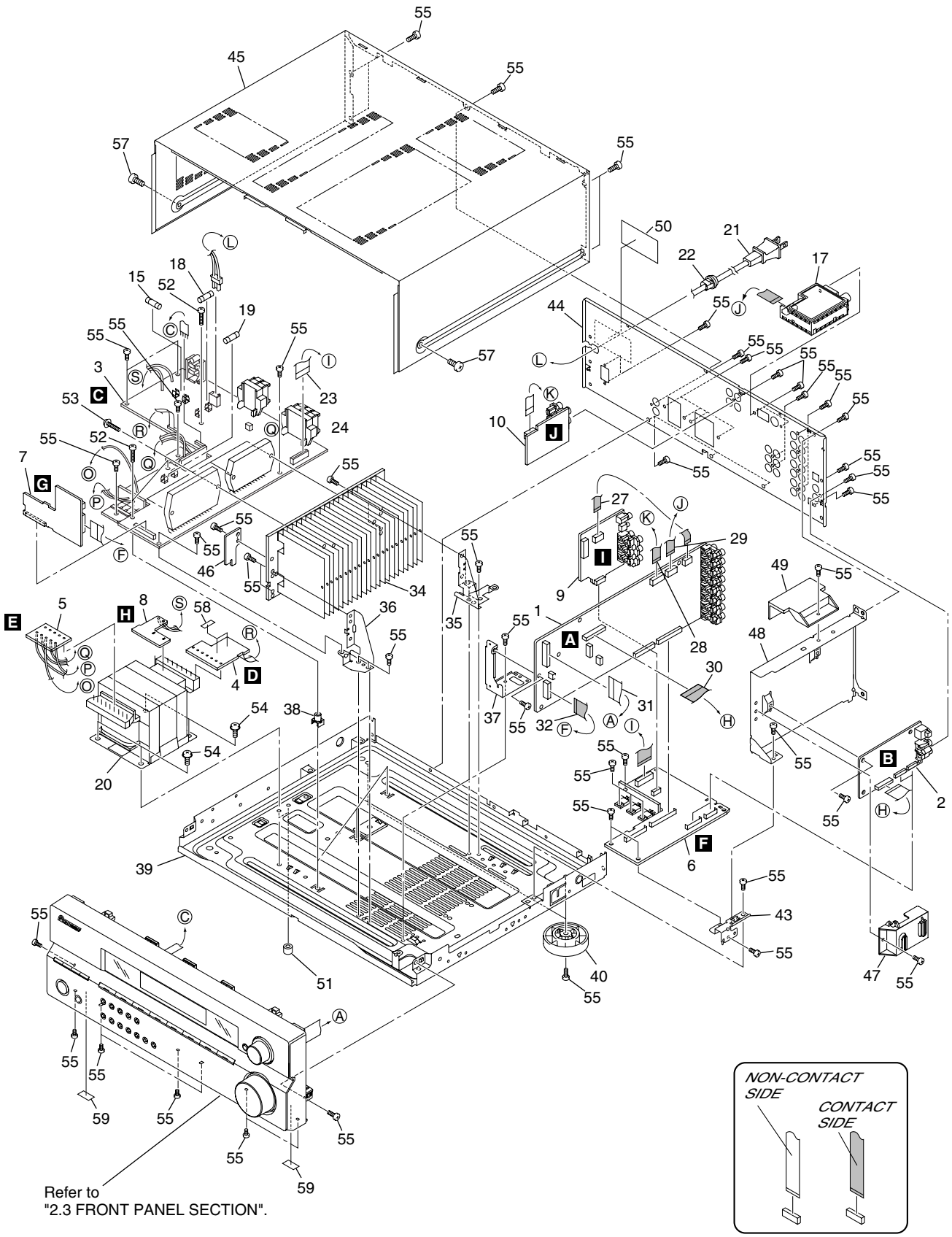
Mark	No.	Description	Part No.
	1	FM wire antenna	ADH7030
NSP	2	Warranty Card	ARY7045
	3	AM loop antenna	ATB7013
NSP	4	Dry cell batteries (AA/R6)	VEM1031
	5	Operating instructions (English/French)	XRE3090
	6	Remote Control Unit	XXD3067
	7	Battery Cover	XZN3139
NSP	8	Literature Bag	AHG1180
	9	Packing Sheet	AHG7069
	10	Left Pad V2	XHA3149
	11	Right Pad V2	XHA3150
	12	Packing Case	See Contrast table(2)

(2) CONTRAST TABLE

VSX-415-K/KUCXJ and VSX-415-S/KUCXJ are constructed the same except for the following :

Mark	No.	Description	VSX-415-K/KUCXJ	VSX-415-S/KUCXJ
	12	Packing Case	XHD3476	XHD3477

2.2 EXTERIOR


Refer to
"2.3 FRONT PANEL SECTION".
NON-CONTACT SIDE
CONTACT SIDE

(1) EXTERIOR SECTION PARTS LIST

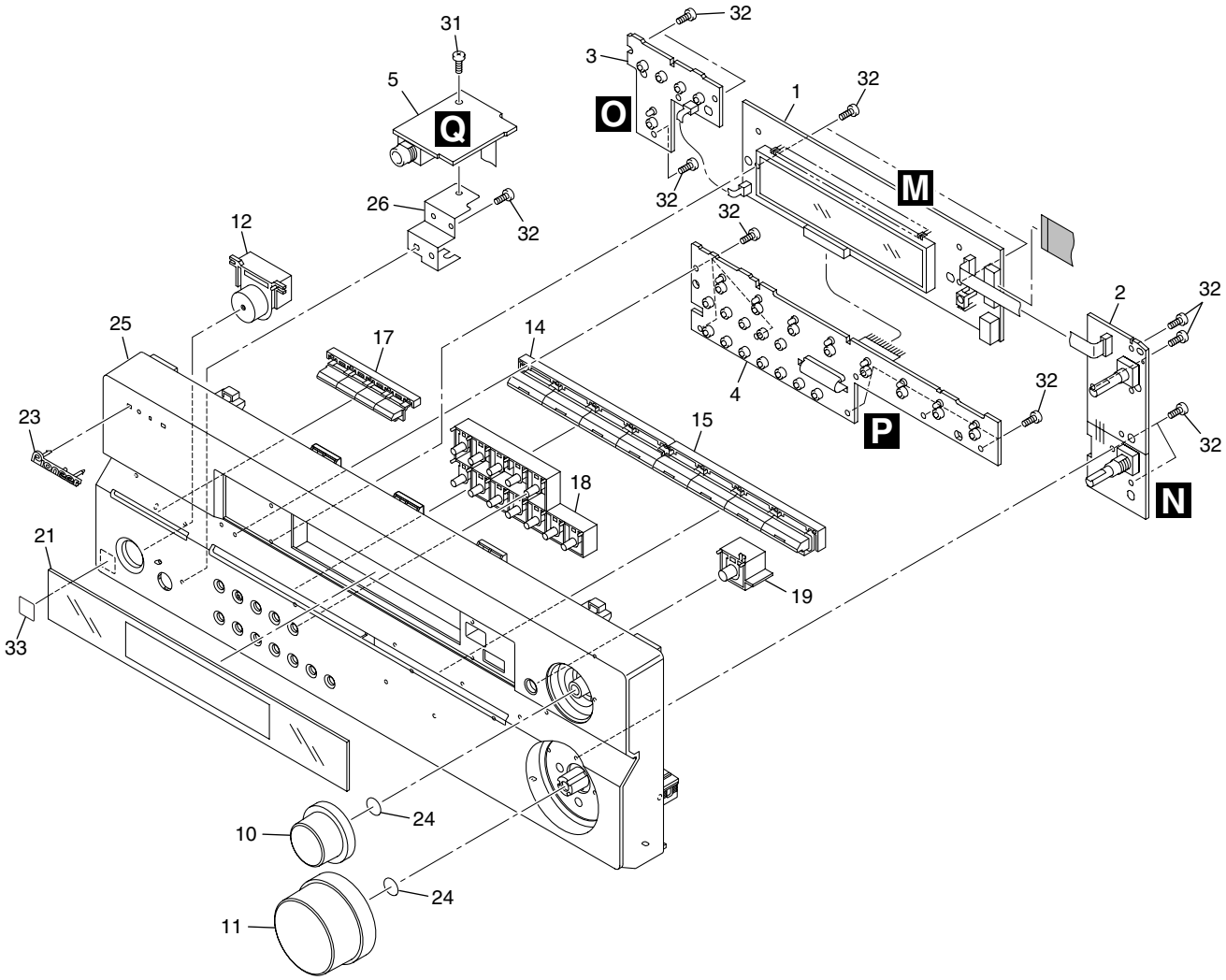
Mark	No.	Description	Part No.
	1	MAIN Assy	XWK3148
	2	DSP Assy	AWX8418
	3	AMP & PRIMARY Assy	XWZ3894
	4	TRANS2 Assy	XWZ3808
	5	TRANS3 Assy	XWZ3812
	6	REGULATOR Assy	XWZ3796
	7	AMP INPUT Assy	XWZ3800
	8	TRANS1 Assy	XWZ3805
	9	VIDEO Assy	XWZ3903
	10	5.1CH Assy	XWZ3914
	11	••••••	
	12	••••••	
	13	••••••	
	14	••••••	
⚠	15	FU2 Fuse (8A)	REK1086
	16	••••••	
	17	FM/AM TUNER UNIT	AXX7172
⚠	18	FU1 Fuse (10A)	REK1087
⚠	19	FU701 Fuse (10A)	REK1087
⚠	20	T1 Power Transformer	XTS3084
⚠	21	AC Power Cord	ADG7024
	22	Cord Stopper	CM-22C
	23	J36 23P F.F.C/30V	XDD3102
	24	••••••	
	25	••••••	
	26	••••••	
	27	J33 13P F.F.C/30V	XDD3150
	28	J48 8P F.F.C/30V	XDD3151
	29	J34 11P F.F.C/30V	XDD3149
	30	J43 19P F.F.C/30V	XDD3126
	31	J31 17P F.F.C/30V	XDD3118
	32	J35 19P F.F.C/30V	XDD3101
	33	••••••	
NSP	34	Heatsink 0.4	ANH7109
	35	Heat Sink Angle R	ANG7252
	36	Heat Sink Angle F	ANG7251
	37	PCB Angle R5	XNG3073
	38	PCB Mold	AMR2533
NSP	39	Under Base R6	XNA3012
	40	Insulator	AMR7198
	41	••••••	
	42	••••••	
	43	REG Support R6	XNG3093
	44	Rear Panel	XNC3332
	45	Bonnet	See Contrast table(2)
NSP	46	HOLDER Assy	XWZ3819
	47	FFC Holder R6	XMR3072
	48	Shield A R6	XNG3068
	49	FFC Cover R6	XMR3060
NSP	50	N Label	See Contrast table(2)
NSP	51	Spacer	AEB7092
	52	Screw	BBZ30P200FTC
	53	Screw 3x23	XBA3012
	54	Screw	FBT40P080FNI
	55	Screw	BBZ30P080FTC
	56	••••••	
	57	Screw	See Contrast table(2)
NSP	58	ICP Label	XAX3319
	59	Rubber Sheet	AEB1111

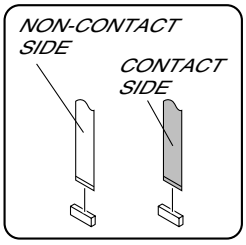
(2) CONTRAST TABLE

VSX-415-K/KUCXJ and VSX-415-S/KUCXJ are constructed the same except for the following :

Mark	No.	Description	VSX-415-K/KUCXJ	VSX-415-S/KUCXJ
	45	Bonnet K V1	XZN3148	Not used
	45	Bonnet S V1	Not used	XZN3149
NSP	50	N Label 415K/KU	XAL3215	Not used
	57	Screw	FBT40P080FTB	FBT40P080FNI

2.3 FRONT PANEL





(1) FRONT PANEL SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	FRONT DISPLAY ASSY	XWZ3908
	2	R. ENCODER Assy	XWZ3920
	3	P. SW & FUNC. KEY Assy	XWZ3917
	4	FRONT KEY Assy	XWZ3912
	5	H.P. Assy	XWZ3923
	6	••••••	
	7	••••••	
	8	••••••	
	9	••••••	
	10	JOG Knob	See Contrast table(2)
	11	VOL Knob	See Contrast table(2)
	12	Standby BTN	See Contrast table(2)
	13	••••••	
	14	FUNC BTN L	See Contrast table(2)
	15	FUNC BTN R	See Contrast table(2)
	16	••••••	
	17	TUNER BTN	See Contrast table(2)
	18	Sub BTN	See Contrast table(2)
	19	JOG BUTTON	See Contrast table(2)
	20	••••••	
	21	D Panel 415 B	XAK3480
	22	••••••	
	23	Pioneer Badge B	See Contrast table(2)
NSP	24	C Ring DIM 8.1	XBH3016
	25	FRT Panel	See Contrast table(2)
	26	Earth Plate HP V2	XNG3131
	27	••••••	
	28	••••••	
	29	••••••	
	30	••••••	
	31	Screw	BBZ30P080FTC
	32	Screw	BPZ30P100FTC
NSP	33	Energy Star Label	AAX8022

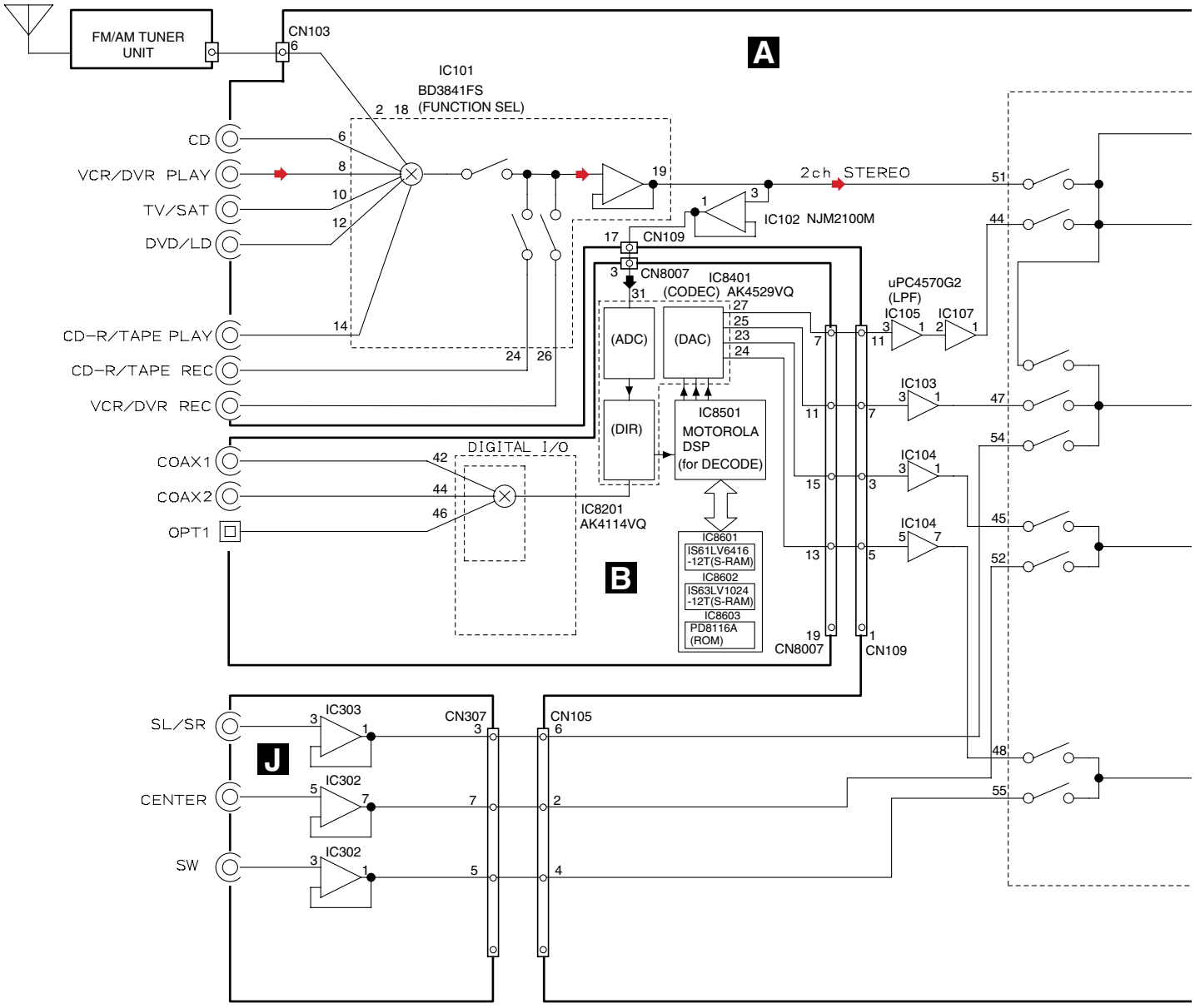
(2) CONTRAST TABLE

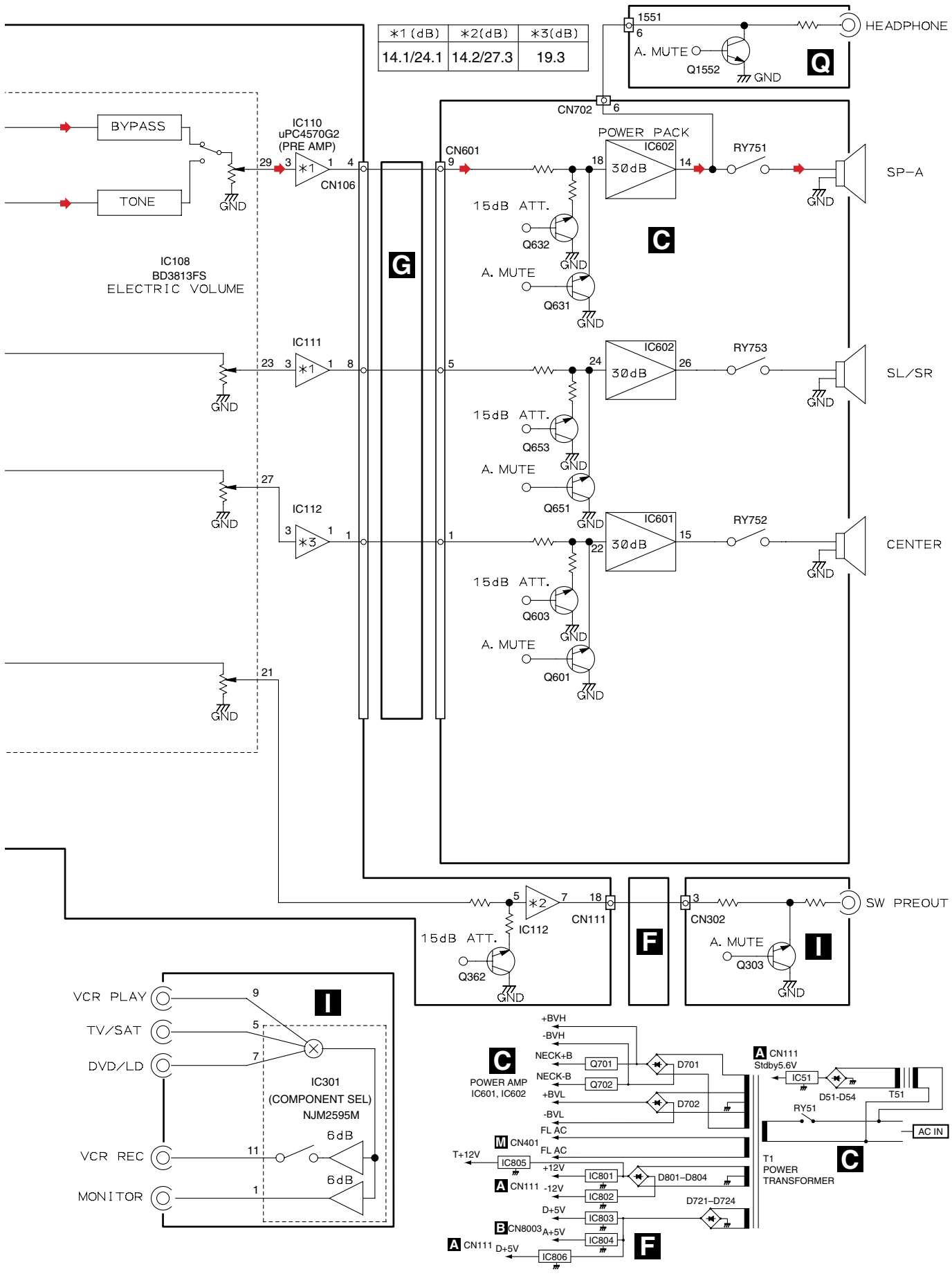
VSX-415-K/KUCXJ and VSX-415-S/KUCXJ are constructed the same except for the following :

Mark	No.	Description	VSX-415-K/KUCXJ	VSX-415-S/KUCXJ
	10	JOG Knob V1K	XAB3038	Not used
	10	JOG Knob V1S	Not used	XAB3042
	11	VOL Knob V1K	XAB3039	Not used
	11	VOL Knob V1S	Not used	XAB3043
	12	Standby BTN 515K	XAD3202	Not used
	12	Standby BTN 515S	Not used	XAD3203
	14	FUNC BTN 515K L	XAD3206	Not used
	14	FUNC BTN 515S L	Not used	XAD3210
	15	FUNC BTN 515K R	XAD3207	Not used
	15	FUNC BTN 515S R	Not used	XAD3211
	17	Tuner BTN V2K	XAD3192	Not used
	17	Tuner BTN V2S	Not used	XAD3193
	18	Sub BTN V2K	XAD3198	Not used
	18	Sub BTN V2S	Not used	XAD3199
	19	Jog Button V2K	XAD3204	Not used
	19	Jog Button V2S	Not used	XAD3205
	23	Pioneer Badge	XAM3006	VAM1129
	25	FRT Panel 415K	XMB3179	Not used
	25	FRT Panel 415S	Not used	XMB3180

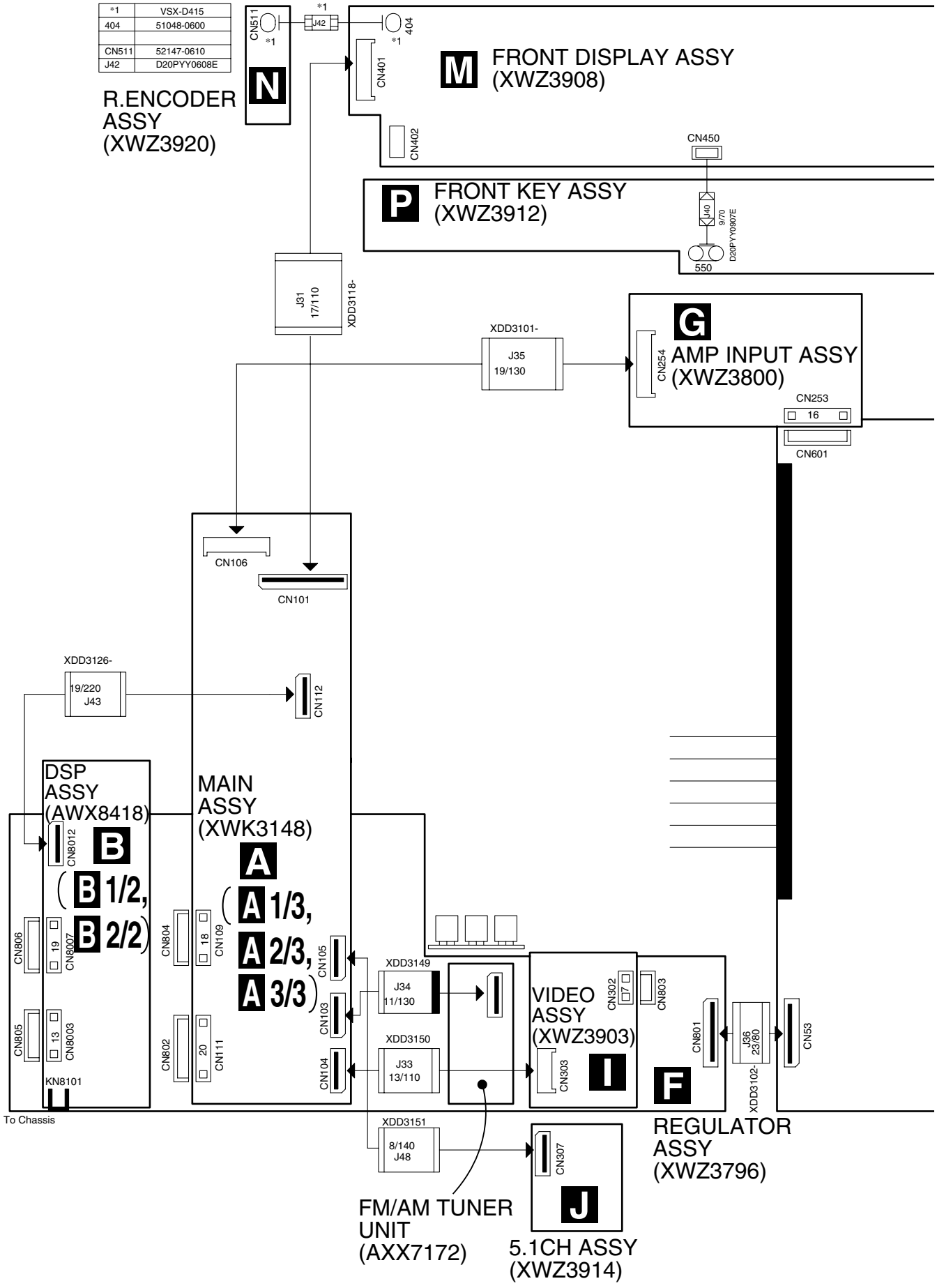
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

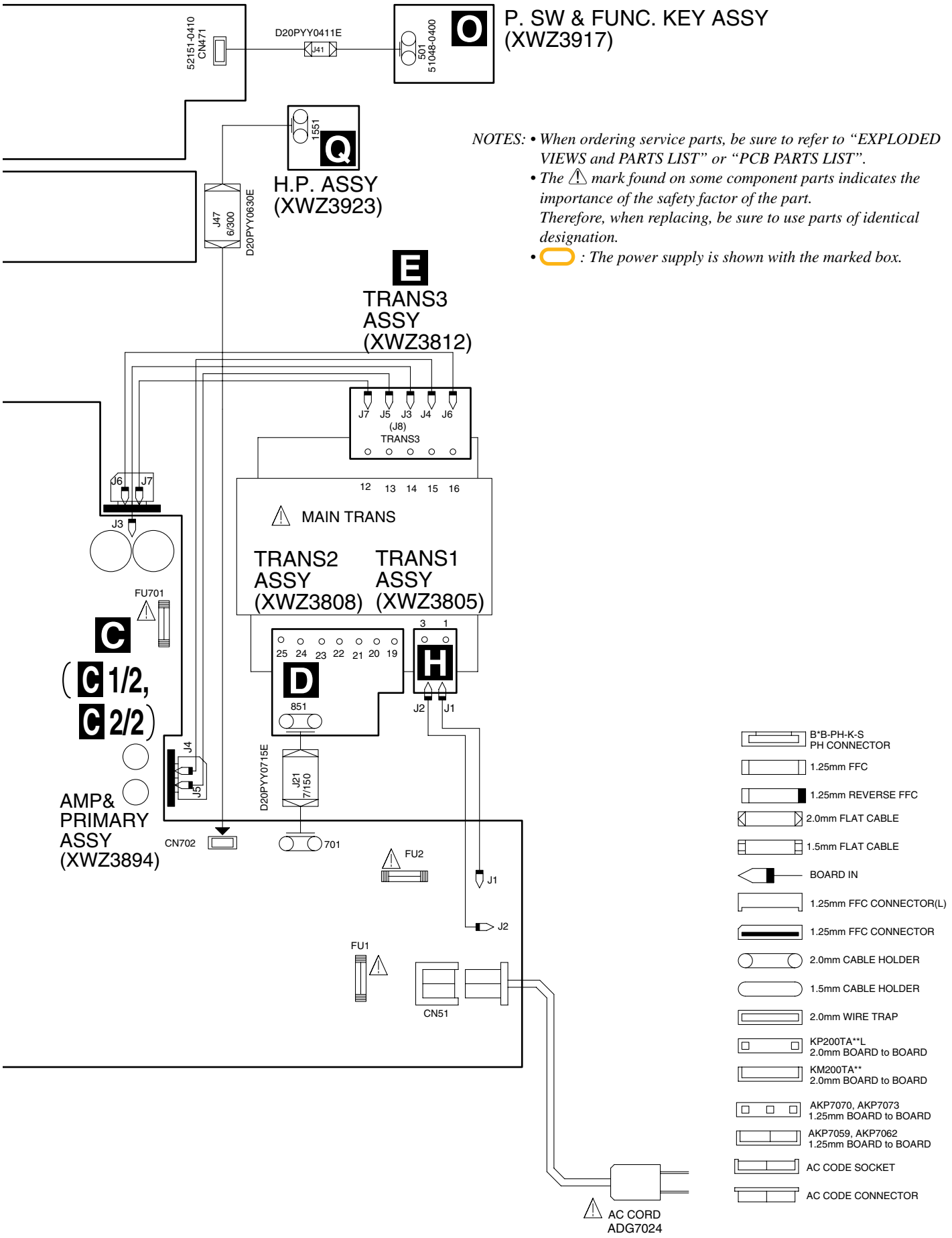
3.1 BLOCK DIAGRAM




∗1 (dB)
∗2(dB)
∗3(dB)
14.1/24.1
14.2/27.3
19.3
1551
6
A. MUTE
Q1552
GND
Q
HEADPHONE
CN702
6
POWER PACK
IC602
30dB
RY751
SP–A
BYPASS
TONE
IC110
uPC4570G2
(PRE AMP)
29
3
∗1
1
4
CN106
GND
CN601
9
18
14
15dB ATT.
Q632
A. MUTE
Q631
C
G
IC108
BD3813FS
ELECTRIC VOLUME
IC111
23
8
5
24
26
RY753
SL/SR
27
IC112
∗3
1
22
IC601
15
RY752
CENTER
Q653
Q651
Q603
Q601
21
∗2
7
18
CN111
F
CN302
3
SW PREOUT
Q362
Q303
I
VCR PLAY
TV/SAT
DVD/LD
VCR REC
MONITOR
9
5
7
11
1
IC301
(COMPONENT SEL)
NJM2595M
6dB
6dB
C
POWER AMP
IC601, IC602
+BVH
-BVH
NECK+B
NECK-B
+BVL
-BVL
Q701
Q702
D701
D702
FL AC
M CN401
T+12V
IC805
+12V
IC801
D801–D804
A CN111
-12V
IC802
D+5V
IC803
B CN8003
A+5V
IC804
A CN111
D+5V
IC806
D721–D724
F
A CN111
Stdby5.6V
IC51
D51-D54
T51
RY51
AC IN
T1
POWER
TRANSFORMER
C

3.2 OVERALL WIRING CONNECTION DIAGRAM

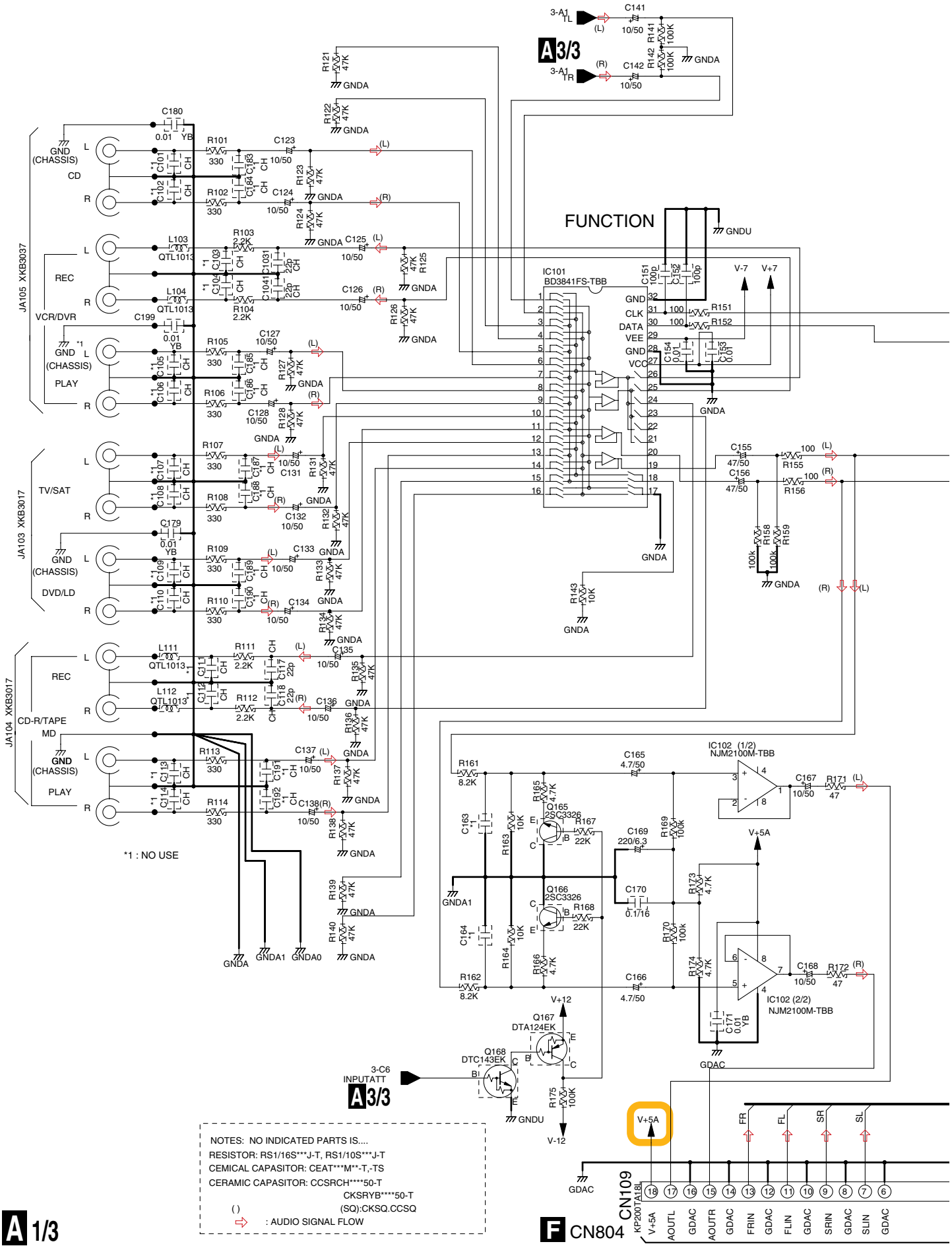


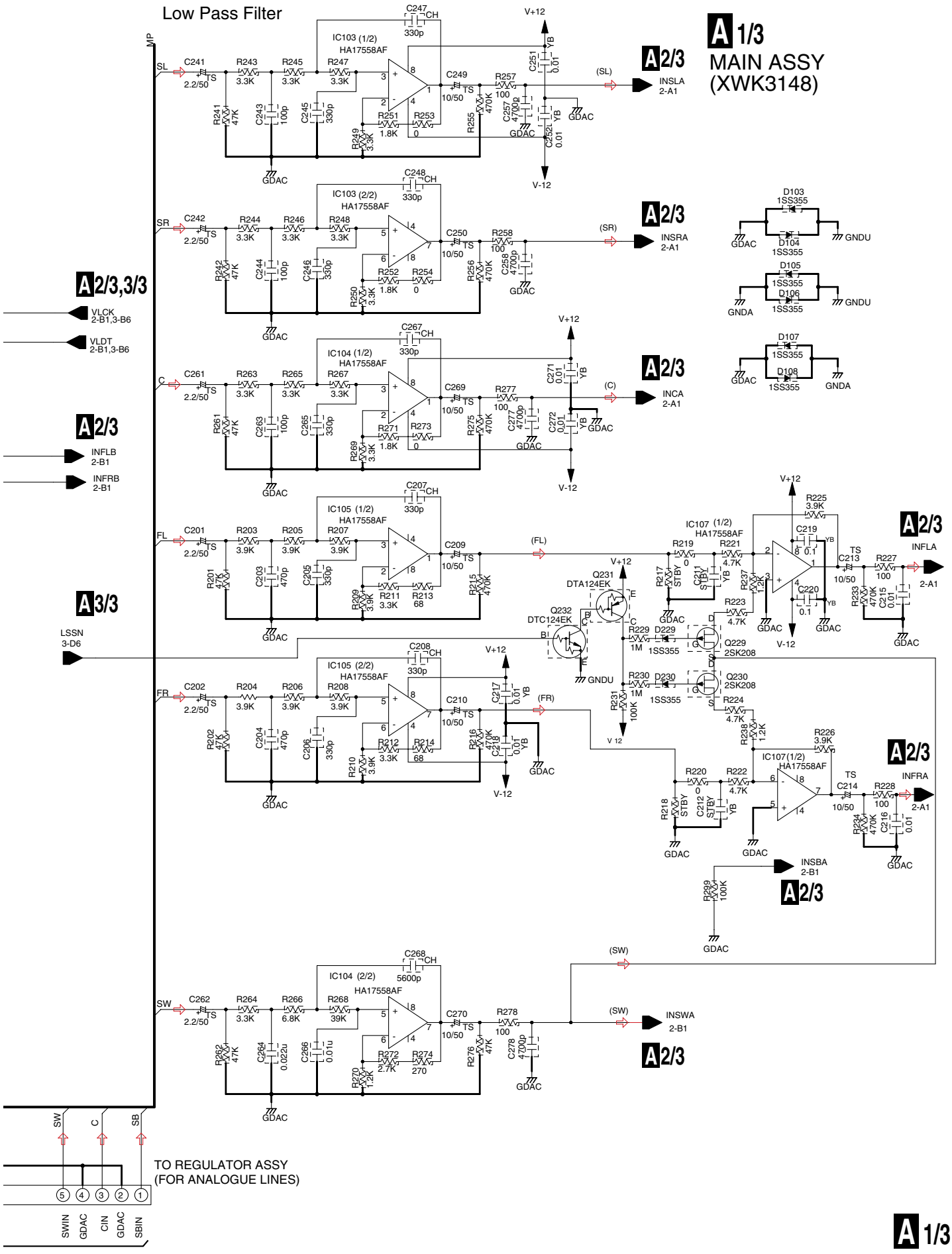


NOTES:
- *When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *: The power supply is shown with the marked box.*

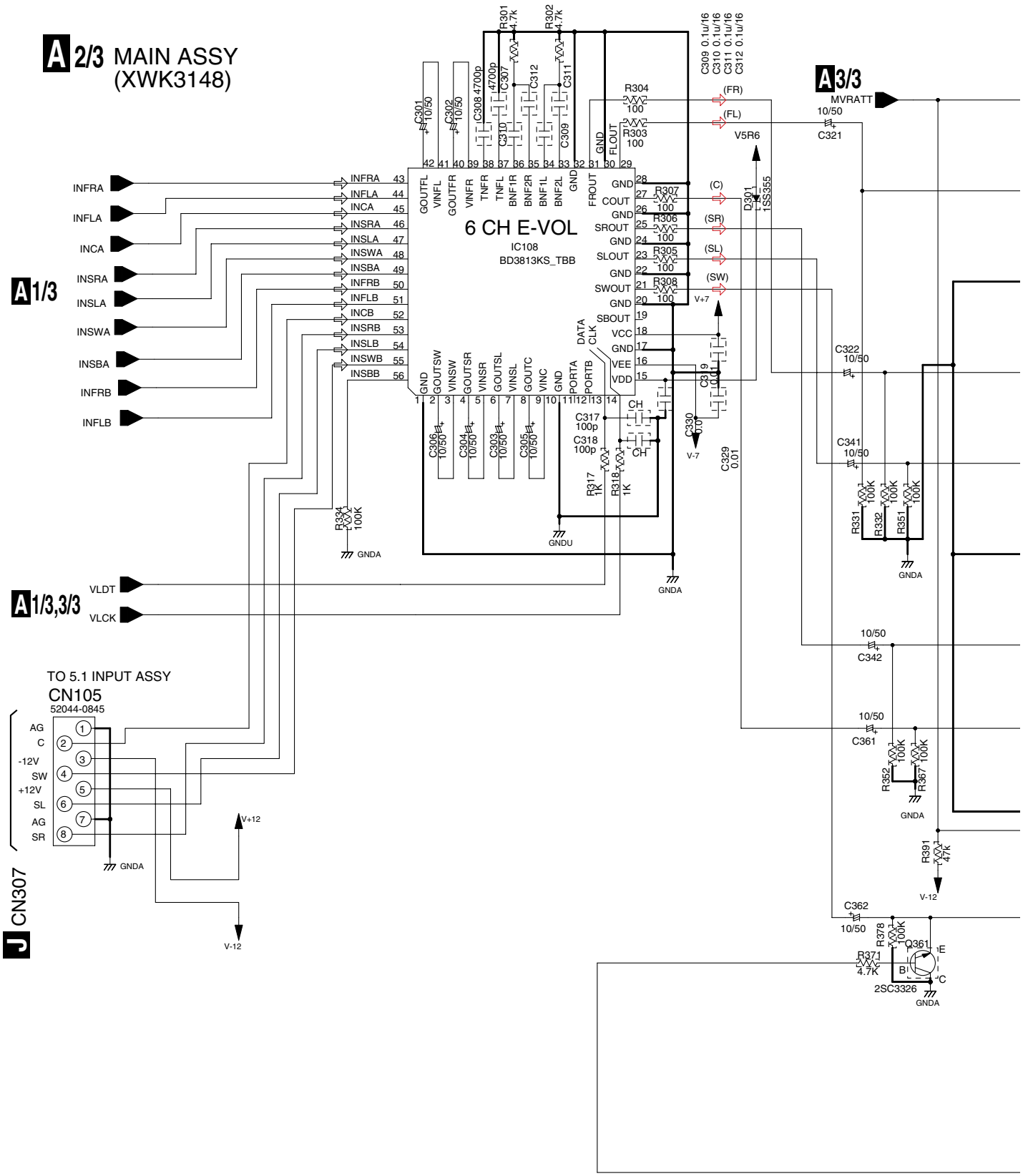
5 6 7 8

3.3 MAIN ASSY (1/3)




Low Pass Filter
A 1/3
MAIN ASSY
(XWK3148)
A2/3,3/3
A2/3
A3/3
A2/3
A2/3
A2/3
A2/3
A2/3
A 1/3
VLCK
2-B1,3-B6
VLDT
2-B1,3-B6
INFLB
2-B1
INFRB
2-B1
LSSN
3-D6
INSLA
2-A1
INSRA
2-A1
INCA
2-A1
INFLA
2-A1
INFRA
2-A1
INSBA
2-B1
INSWA
2-B1
IC103 (1/2)
HA17558AF
IC103 (2/2)
HA17558AF
IC104 (1/2)
HA17558AF
IC104 (2/2)
HA17558AF
IC105 (1/2)
HA17558AF
IC105 (2/2)
HA17558AF
IC107 (1/2)
HA17558AF
IC107(1/2)
HA17558AF
Q231
DTA124EK
Q232
DTC124EK
Q229
2SK208
Q230
2SK208
D103
1SS355
D104
1SS355
D105
1SS355
D106
1SS355
D107
1SS355
D108
1SS355
V+12
V-12
GDAC
GNDU
GNDA
TO REGULATOR ASSY
(FOR ANALOGUE LINES)
SWIN
GDAC
CIN
GDAC
SBIN

3.4 MAIN ASSY (2/3)



NOTE

1.RESISTORS

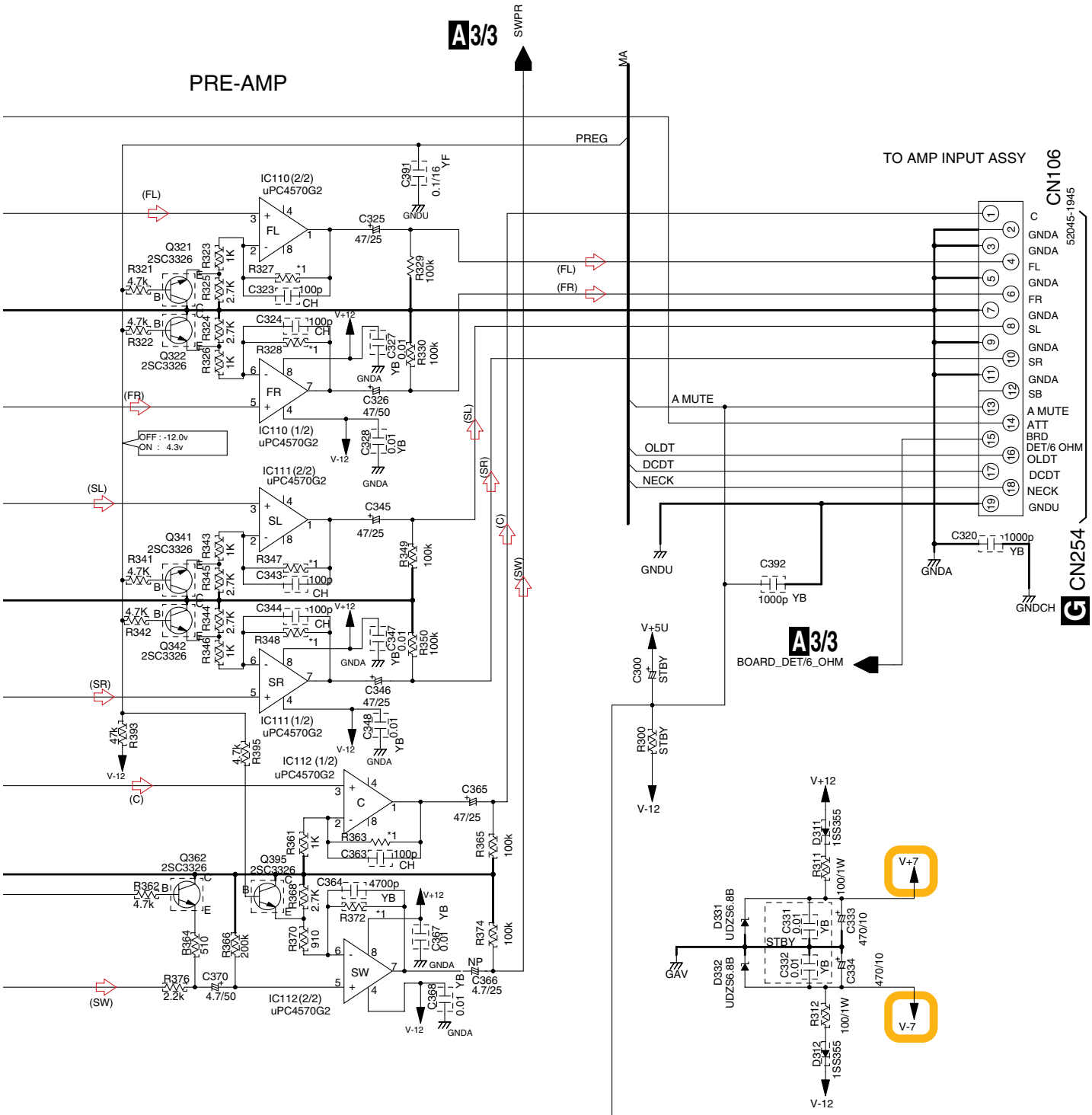
Unit: k-kΩ, M-MΩ or Ω unless otherwise noted.
Rated power: 1/10W unless otherwise noted.
Tolerance: (J) ± 5% unless otherwise noted.

2.CAPACITORS

Unit: p-pF or μF unless otherwise noted.
Ratings: Capacity(μF)/Voltage(V) unless otherwise noted.
Rated Voltage: 50V expect for electrolytic capacitors.
JA:CEJA

⇨ : AUDIO SIGNAL FLOW

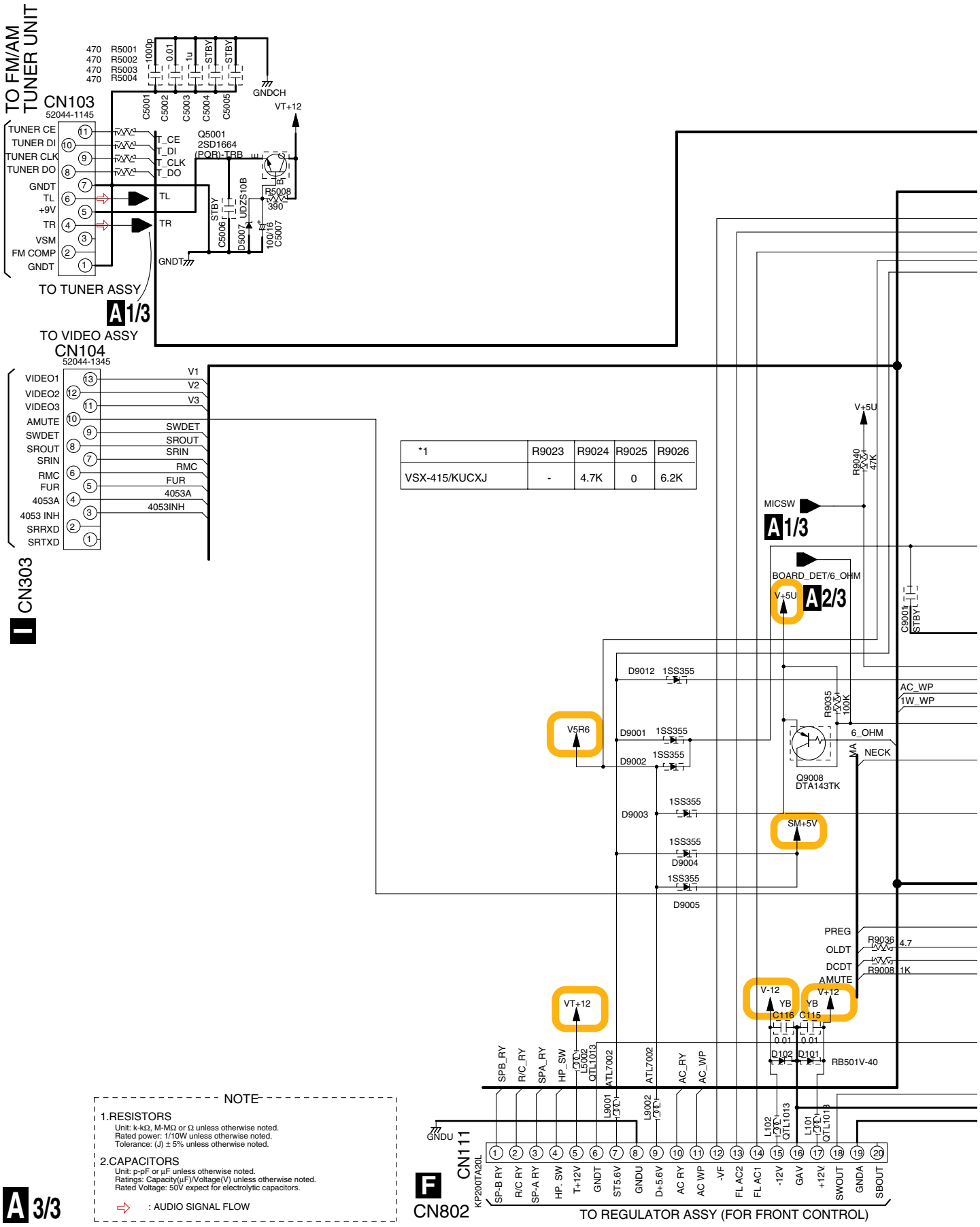
A 2/3

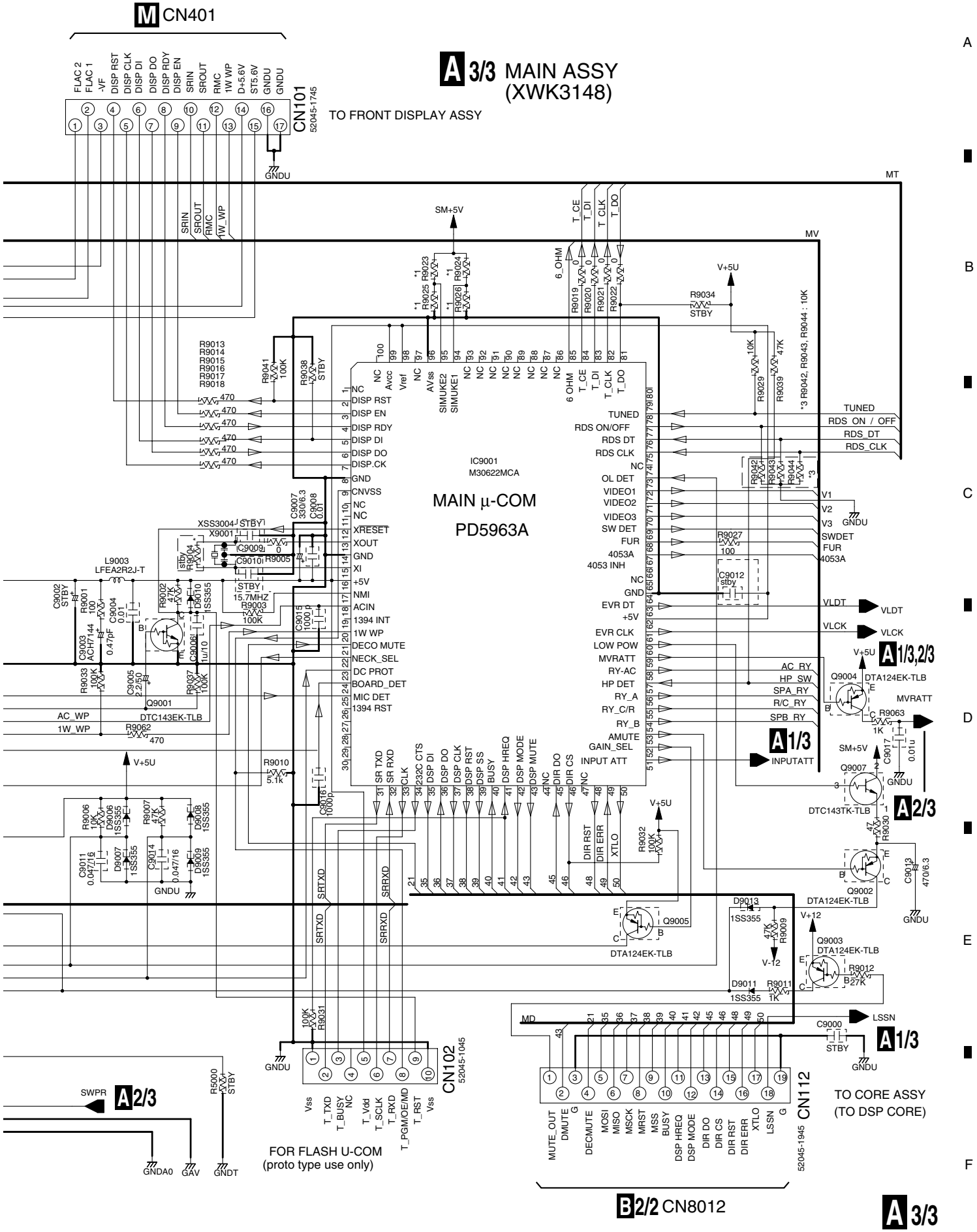


	FRONT, REAR		Center		SW	
*1	R327 R328 R347 R348 (Ohm)	GAIN(dB)	R363 (Ohm)	GAIN(dB)	R372 (Ohm)	GAIN(dB)
	15K	14.1/24.1	8.2K	19.3	15K	14.2/27.3

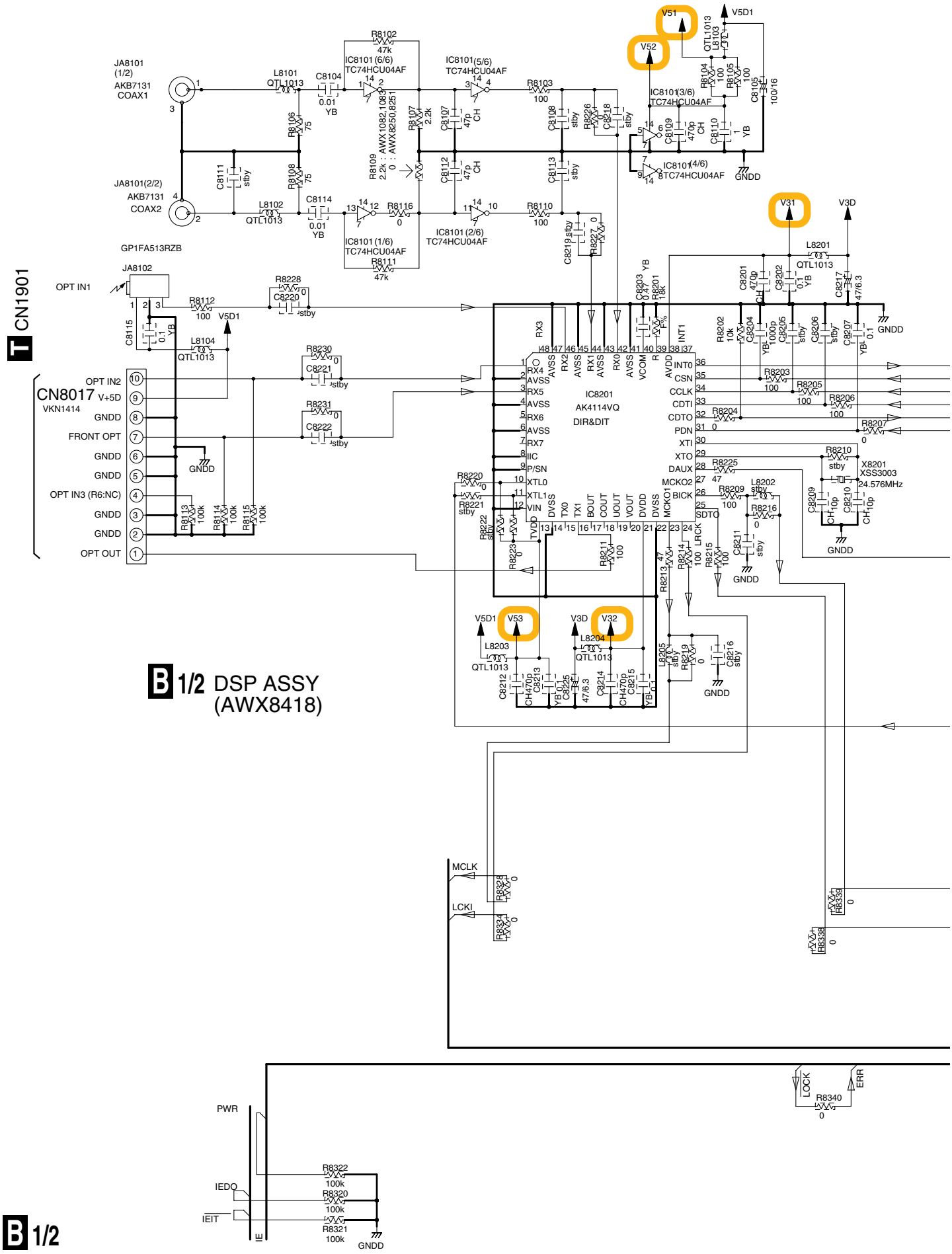
A2/3

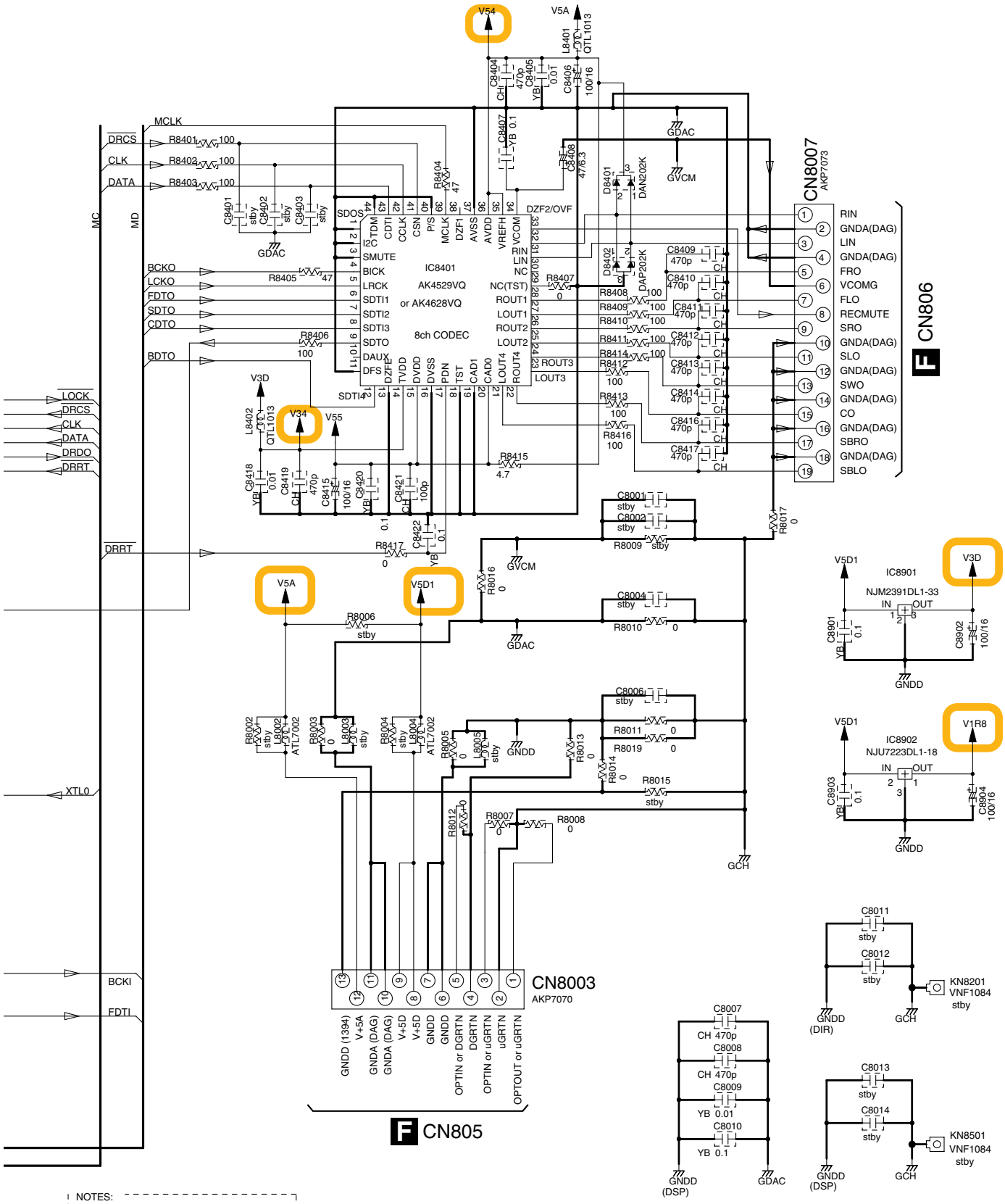
3.5 MAIN ASSY (3/3)




M CN401
A 3/3 MAIN ASSY
(XWK3148)
TO FRONT DISPLAY ASSY
CN101
52045-1745
IC9001
M30622MCA
MAIN μ-COM
PD5963A
CN102
52045-1045
CN112
52045-1945
TO CORE ASSY
(TO DSP CORE)
FOR FLASH U-COM
(proto type use only)
B 2/2 CN8012
A 3/3
A 1/3
A 2/3
A 1/3,2/3
VSX-415-K
21

3.6 DSP ASSY (1/2)





NOTES:

NO INDICATED PARTS IS...

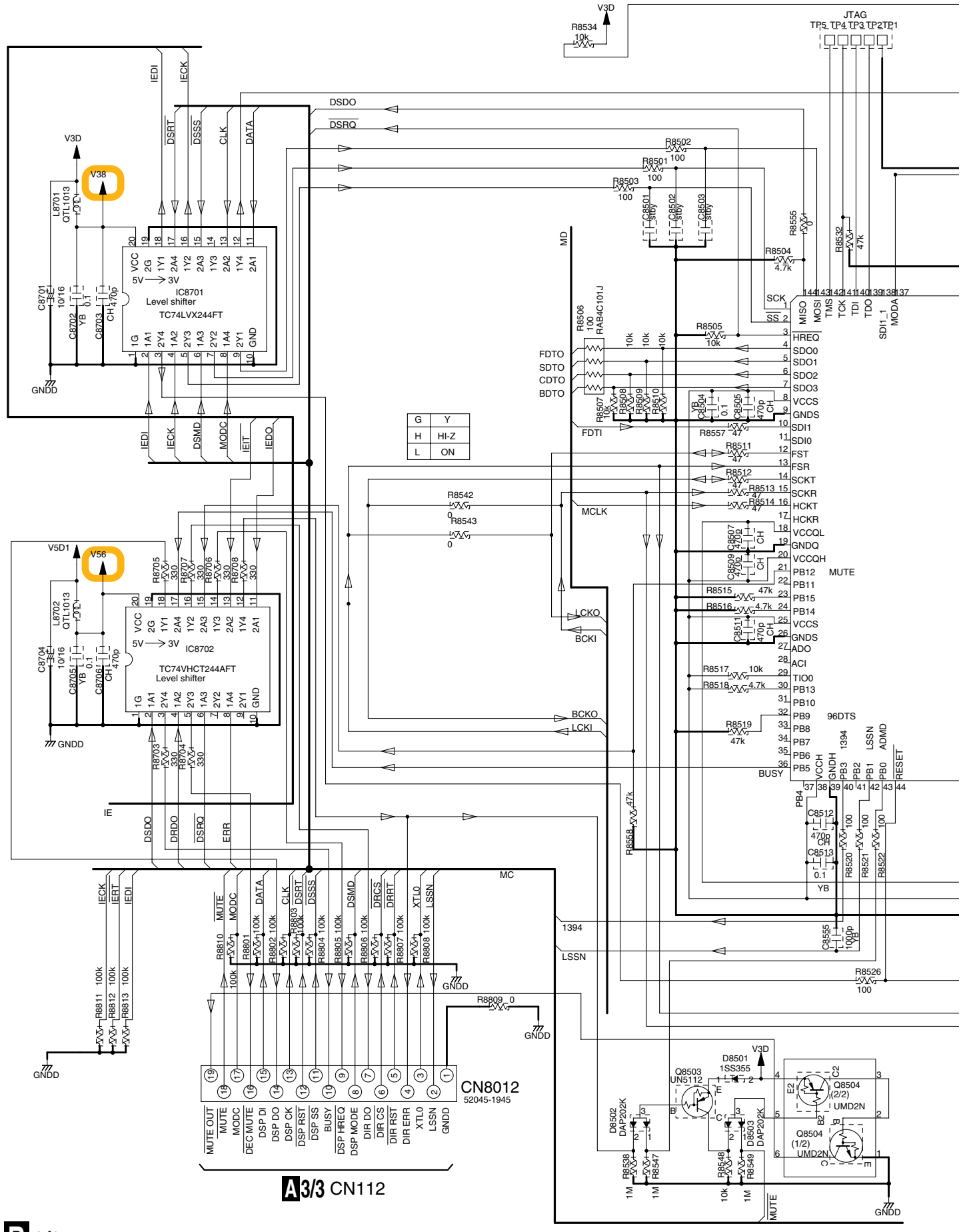
CCSRCH****50-T
CKSRYB****50-T
CKSRYB333K16-T
CKSRYB104K16-T
CKSRYB105K6R3-T

CEV***M***-T

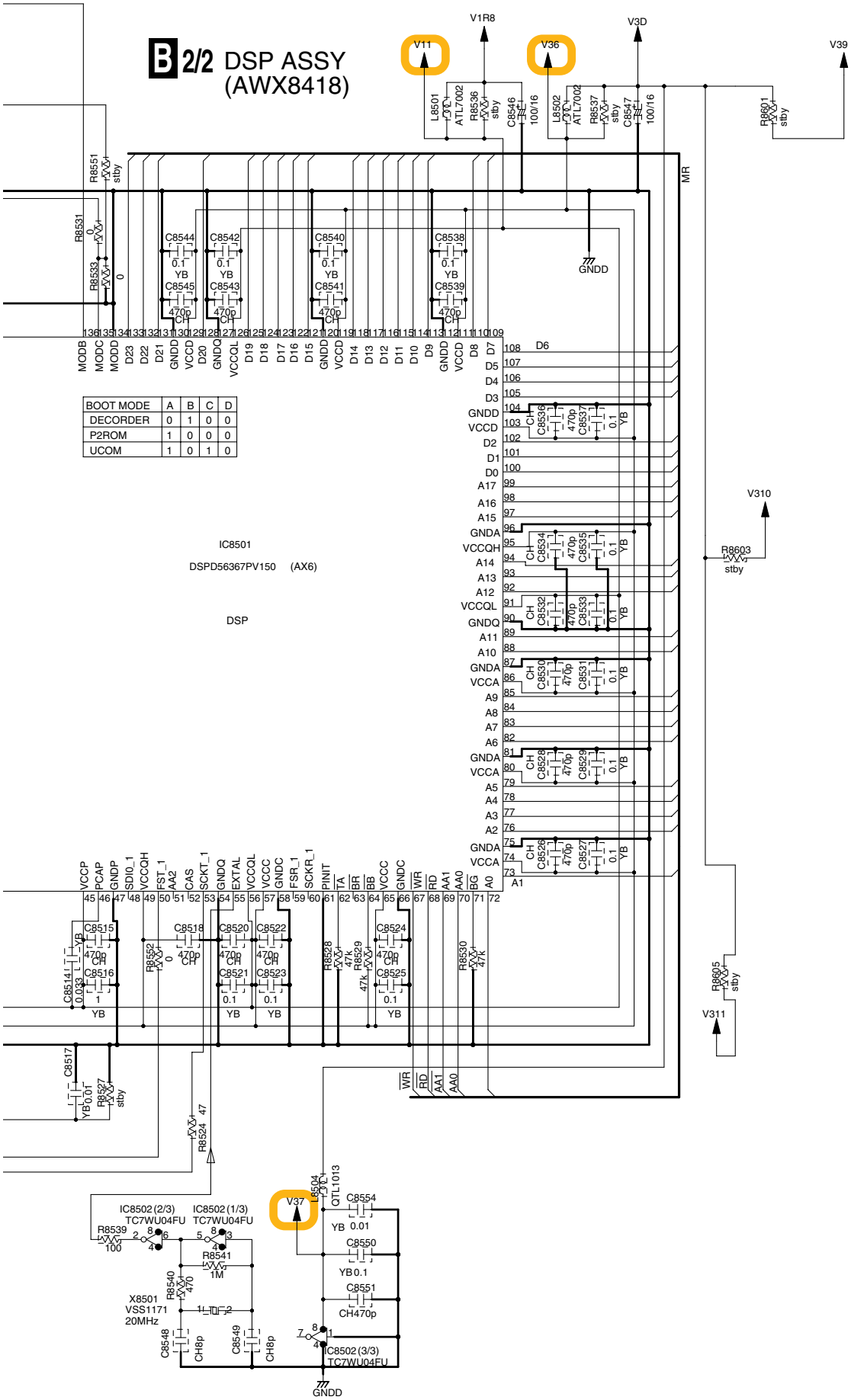
RS1/16S***J-T

UNLESS OTHERWISE NOTED

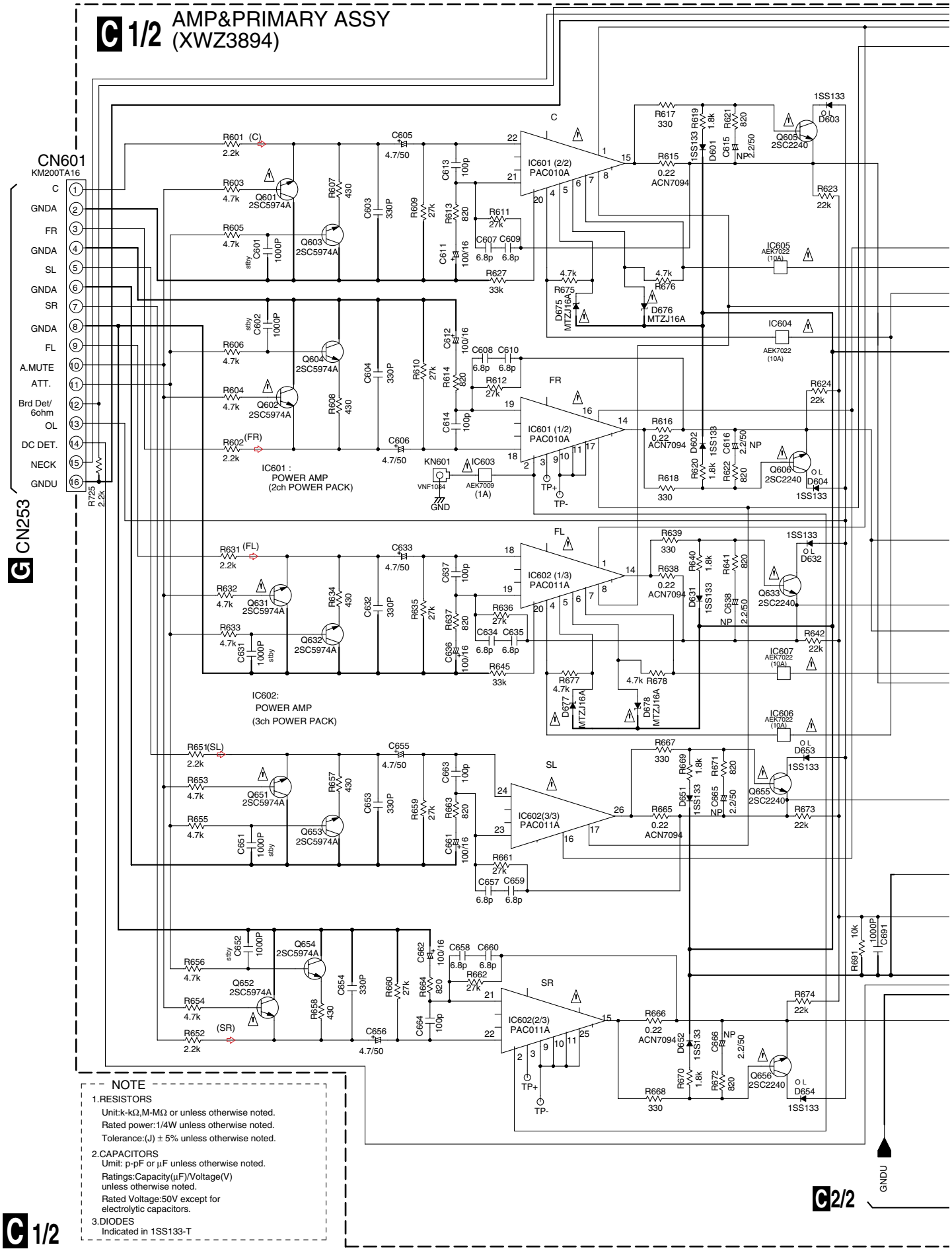
3.7 DSP ASSY (2/2)



B 2/2 DSP ASSY (AWX8418)



3.8 AMP & PRIMARY (1/2),TRANS2 and TRANS3 ASSYS

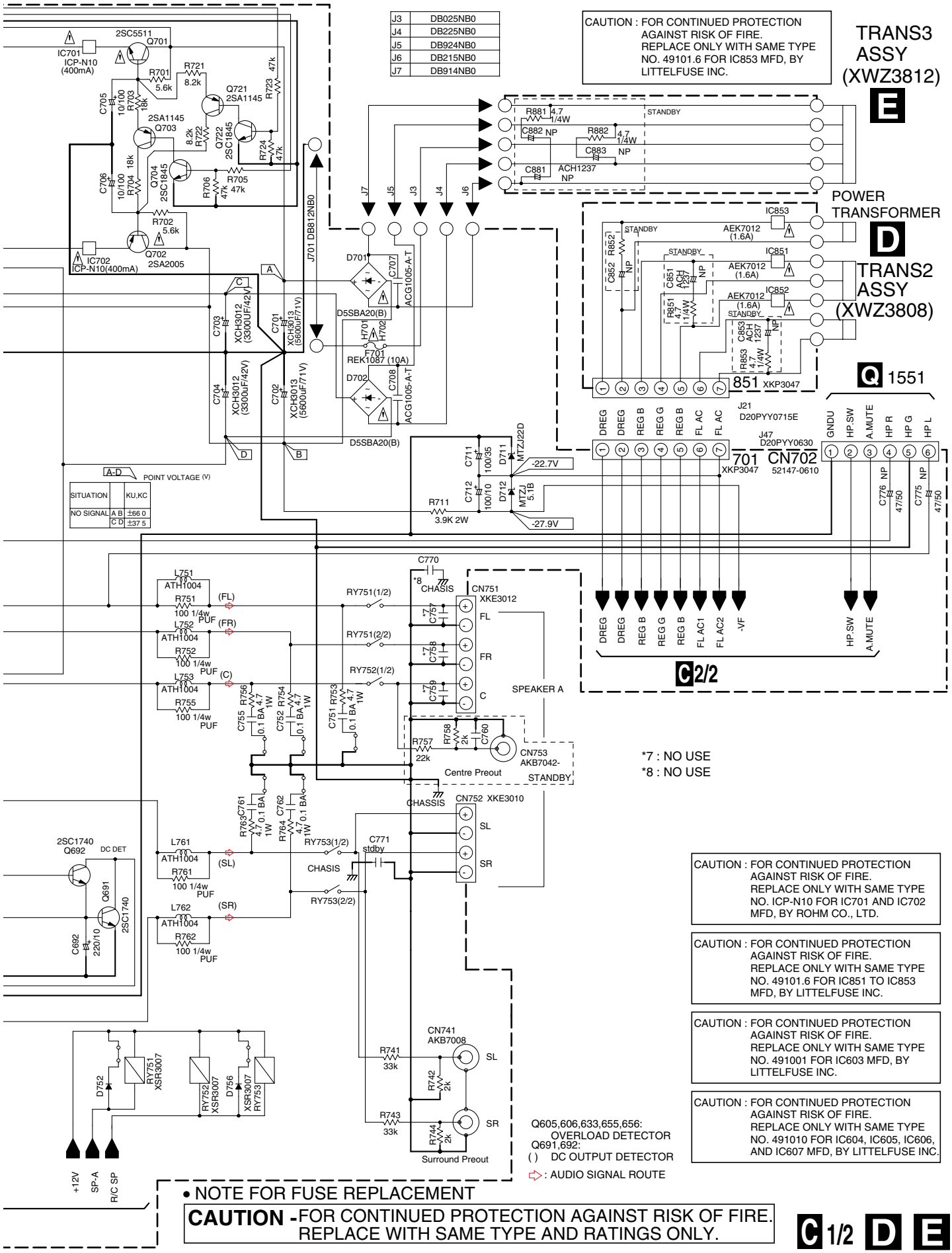


NOTE

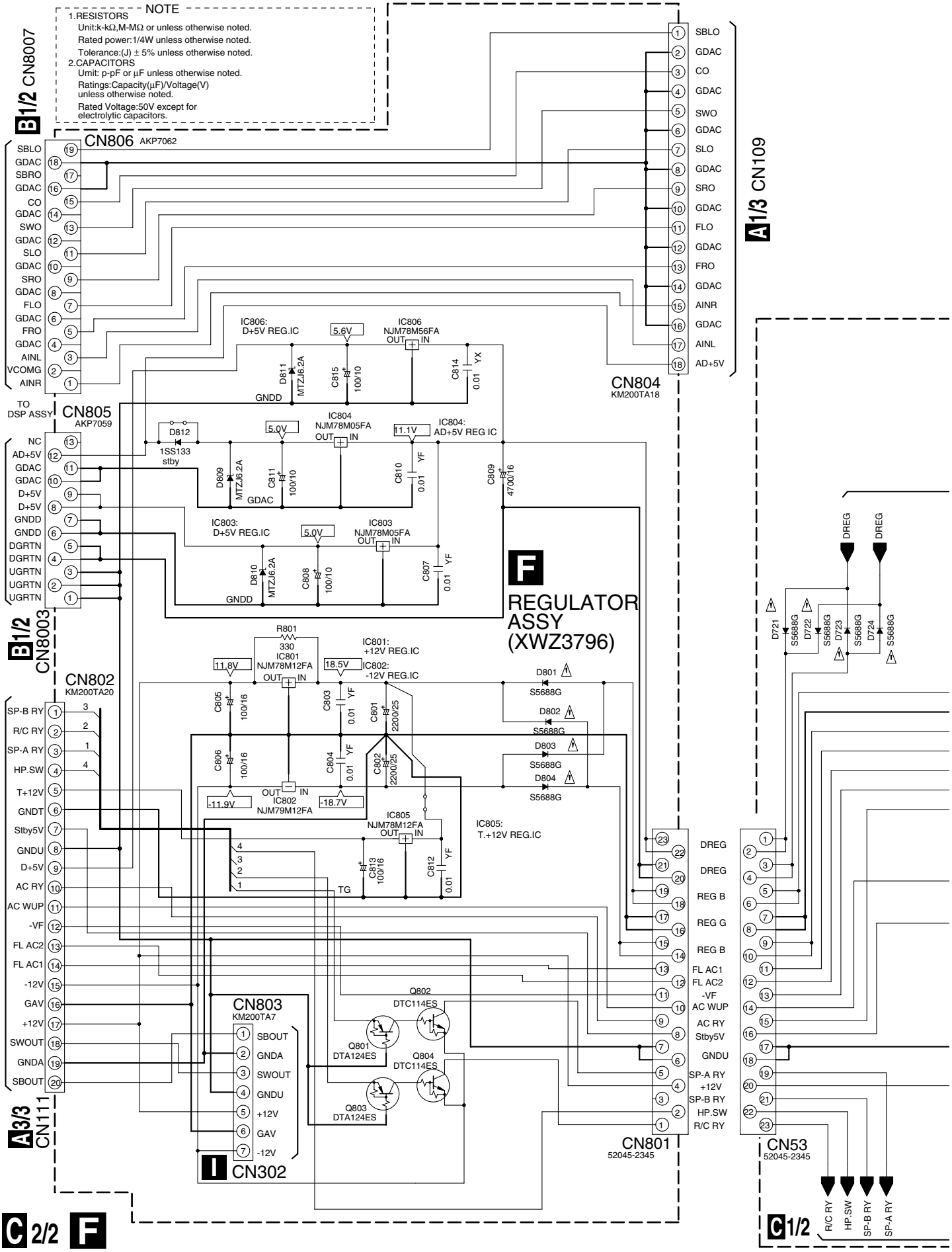
1.RESISTORS
Unit:k-kΩ,M-MΩ or unless otherwise noted.
Rated power:1/4W unless otherwise noted.
Tolerance:(J) ± 5% unless otherwise noted.

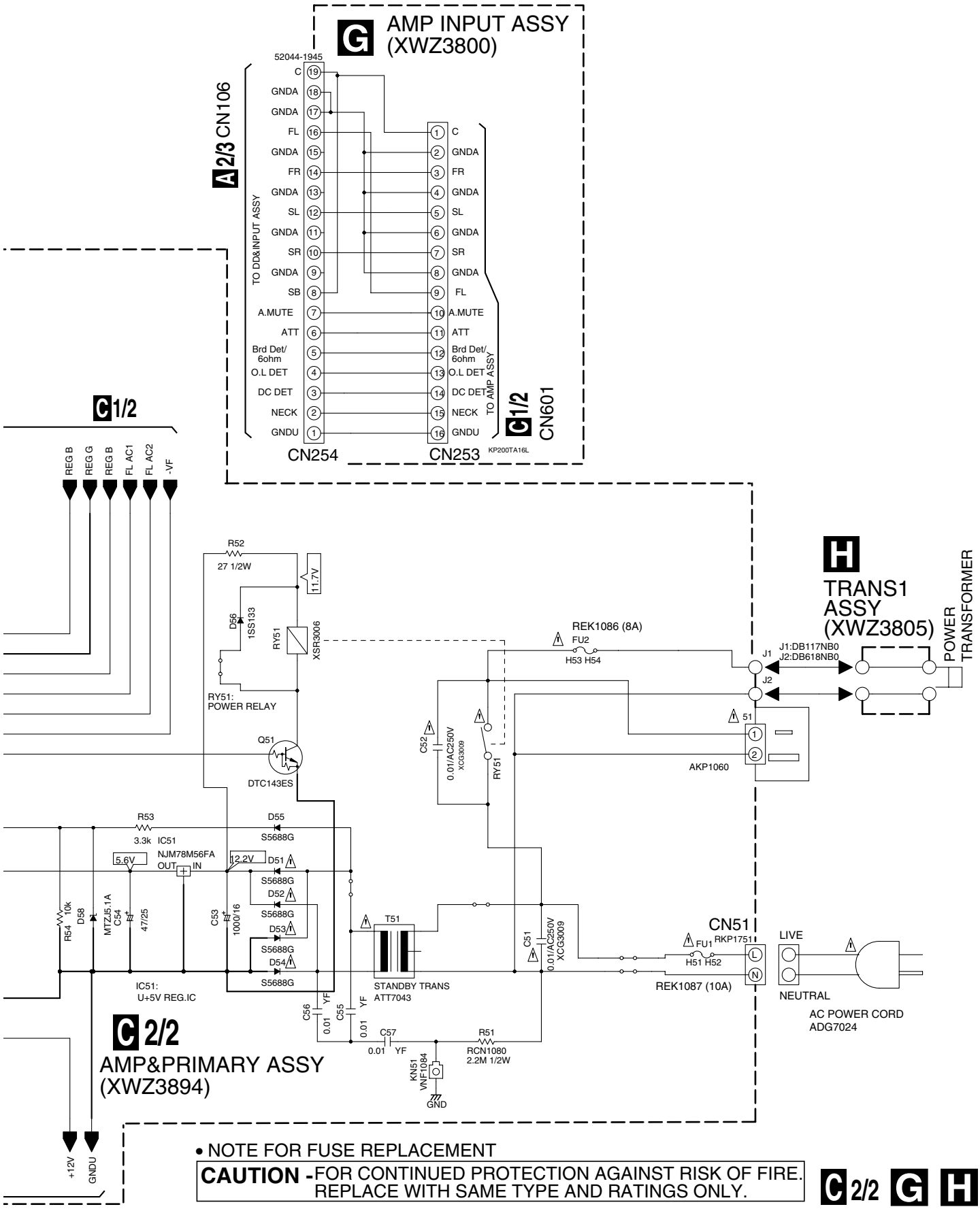
2.CAPACITORS
Umit: p-pF or µF unless otherwise noted.
Ratings:Capacity(µF)/Voltage(V) unless otherwise noted.
Rated Voltage:50V except for electrolytic capacitors.

3.DIODES
Indicated in 1SS133-T


TRANS3 ASSY (XWZ3812)
E
POWER TRANSFORMER
D
TRANS2 ASSY (XWZ3808)
Q 1551
C 2/2
C 1/2 D E
J3 DB025NB0
J4 DB225NB0
J5 DB924NB0
J6 DB215NB0
J7 DB914NB0
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 49101.6 FOR IC853 MFD, BY LITTELFUSE INC.
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. ICP-N10 FOR IC701 AND IC702 MFD, BY ROHM CO., LTD.
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 49101.6 FOR IC851 TO IC853 MFD, BY LITTELFUSE INC.
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 491001 FOR IC603 MFD, BY LITTELFUSE INC.
CAUTION : FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE ONLY WITH SAME TYPE NO. 491010 FOR IC604, IC605, IC606, AND IC607 MFD, BY LITTELFUSE INC.
*7 : NO USE
*8 : NO USE
Q605,606,633,655,656: OVERLOAD DETECTOR
Q691,692: ( ) DC OUTPUT DETECTOR
: AUDIO SIGNAL ROUTE
• NOTE FOR FUSE REPLACEMENT
CAUTION -FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE WITH SAME TYPE AND RATINGS ONLY.
IC701 ICP-N10 (400mA)
IC702 ICP-N10(400mA)
IC851 AEK7012 (1.6A)
IC852 AEK7012 (1.6A)
IC853 AEK7012 (1.6A)
851 XKP3047
701 XKP3047
CN702 52147-0610
J21 D20PYY0715E
J47 D20PYY0630
CN751 XKE3012
CN752 XKE3010
CN753 AKB7042-
CN741 AKB7008
SPEAKER A
Centre Preout
Surround Preout
STANDBY
REK1087 (10A)
D5SBA20(B)
-22.7V
-27.9V
POINT VOLTAGE (V)
DREG
REG B
REG G
FL AC
GNDU
HP.SW
A.MUTE
HP R
HP G
HP L
FL
FR
SL
SR
-VF
FL AC1
FL AC2
+12V
SP-A
R/C SP

3.9 AMP & PRIMARY (2/2), REGULATOR, AMP INPUT and TRANS1 ASSYS



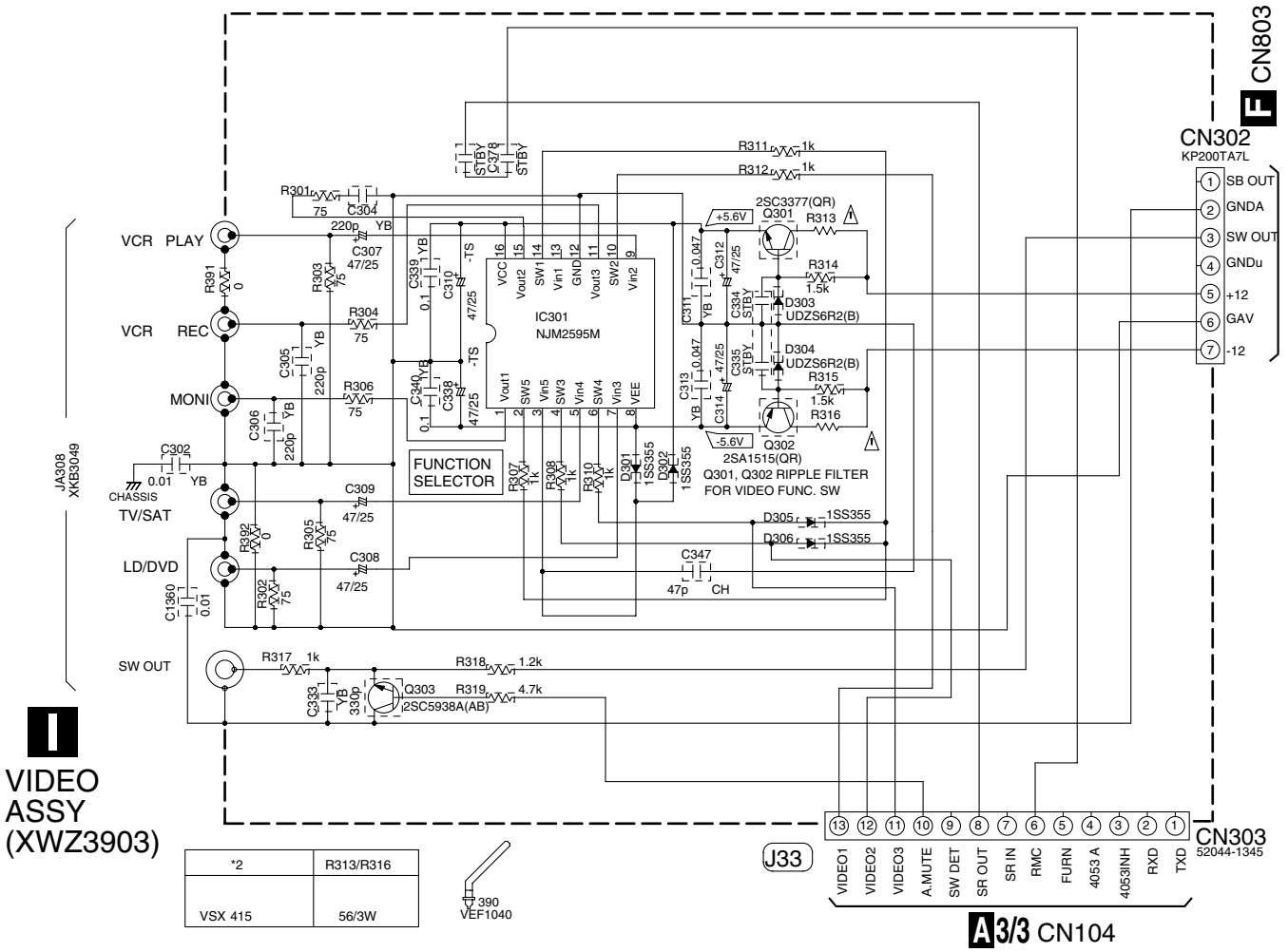


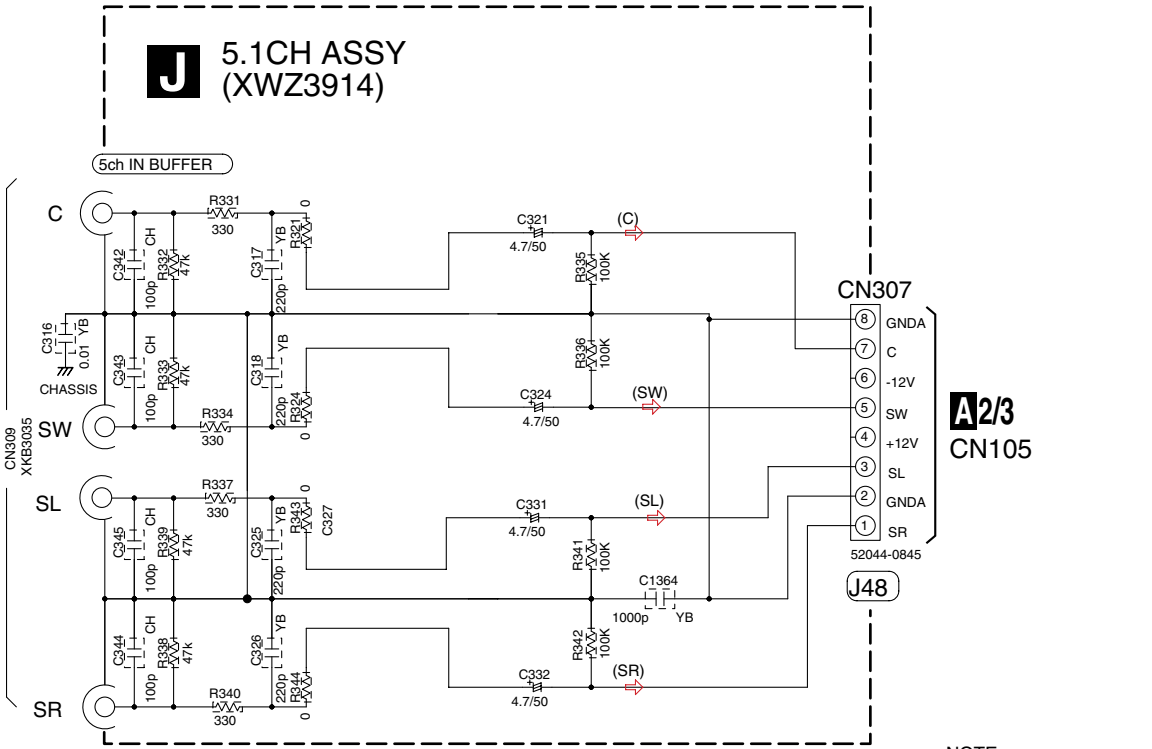
• NOTE FOR FUSE REPLACEMENT

CAUTION - FOR CONTINUED PROTECTION AGAINST RISK OF FIRE. REPLACE WITH SAME TYPE AND RATINGS ONLY.

C 2/2 G H

3.10 VIDEO and 5.1CH ASSYS





NOTE

1.RESISTORS
Unit: k-kΩ, M-MΩ or Ω unless otherwise noted.
Rated power: 1/10W unless otherwise noted.
Tolerance: (J) ± 5% unless otherwise noted.

2.CAPACITORS
Unit: p-pF or µF unless otherwise noted.
Ratings: Capacity(µF)/Voltage(V) unless otherwise noted.
Rated Voltage: 50V expect for electrolytic capacitors.

VIDEO SIGNAL FLOW
AUDIO SIGNAL FLOW

I J

A

B

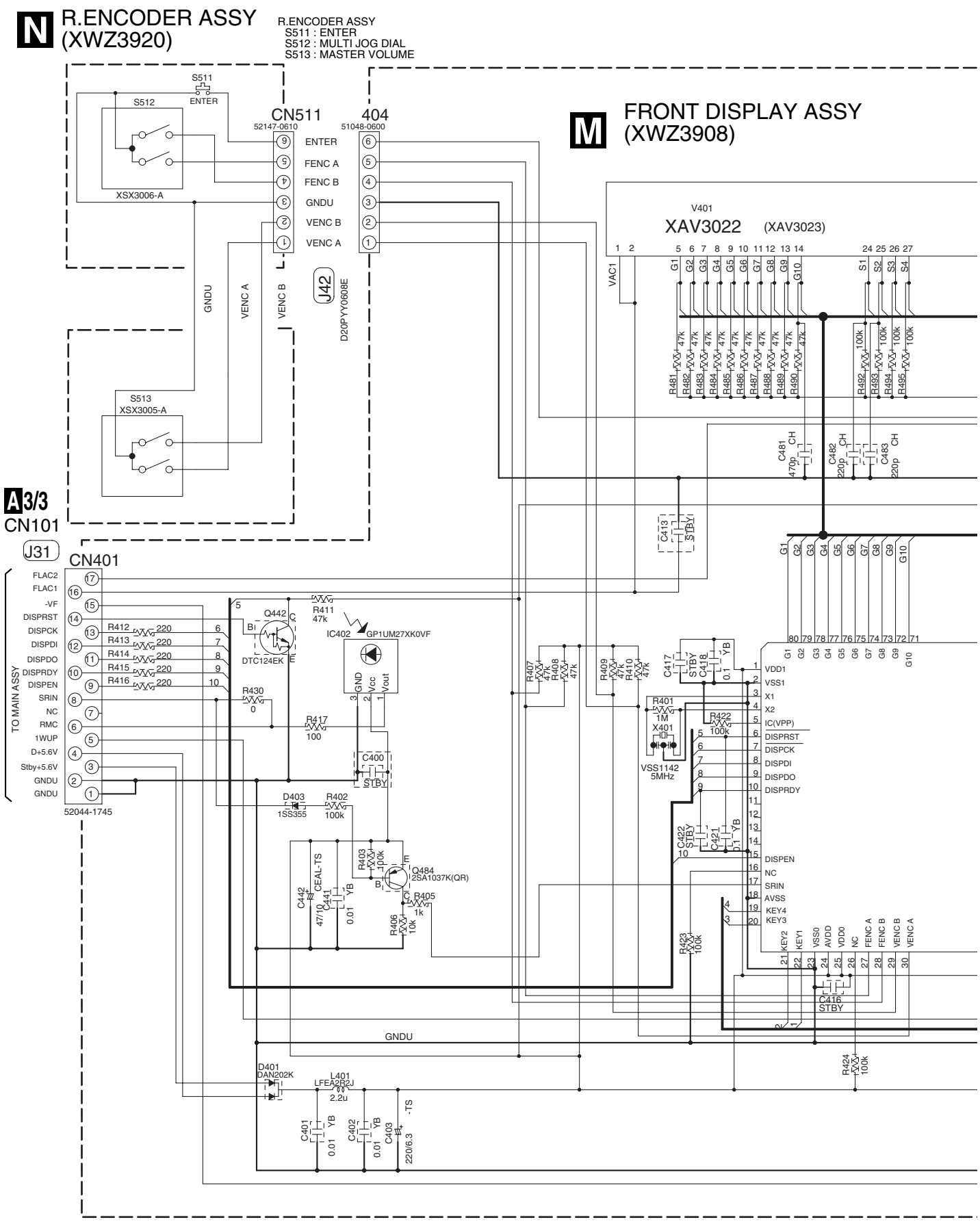
C

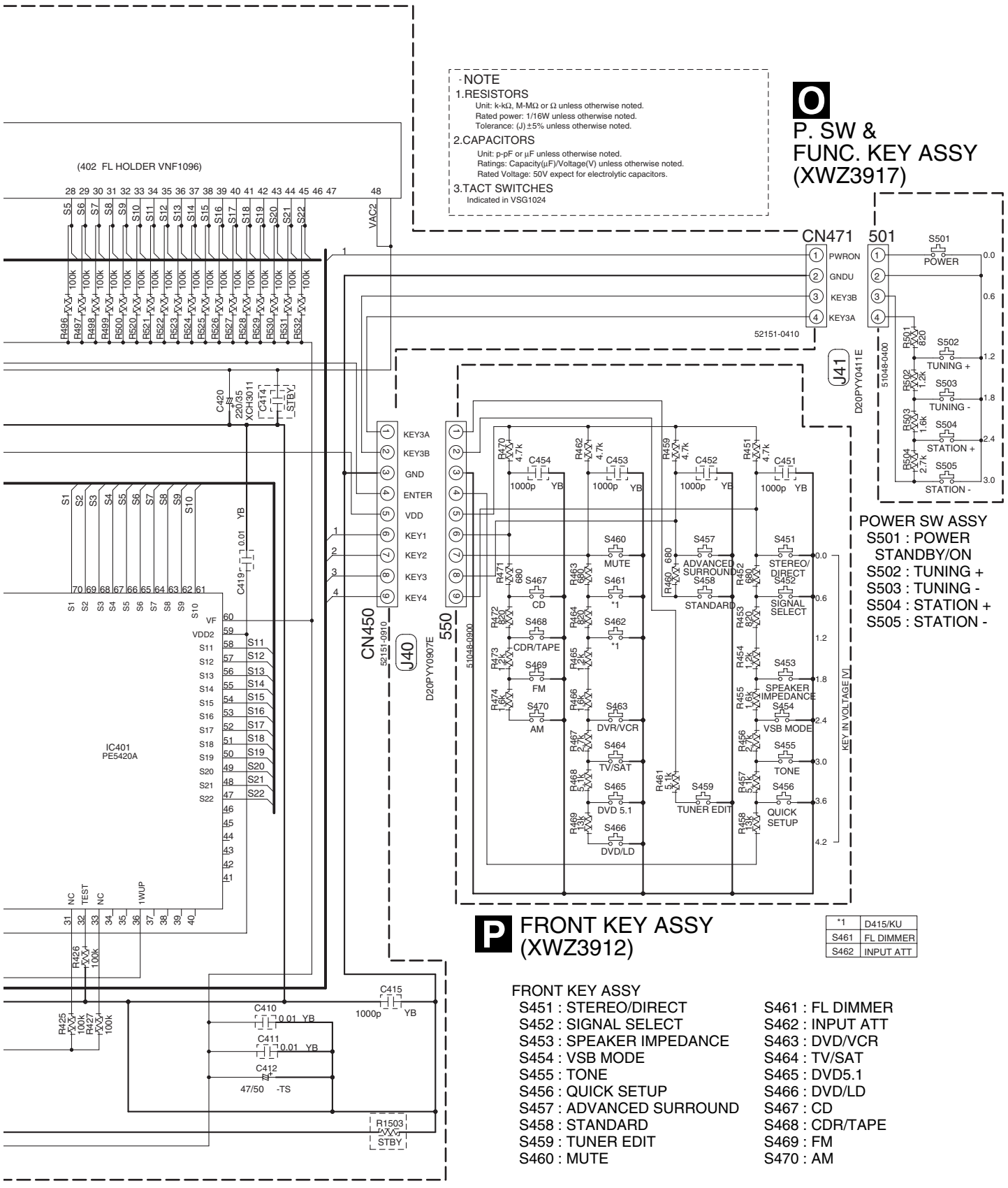
D

E

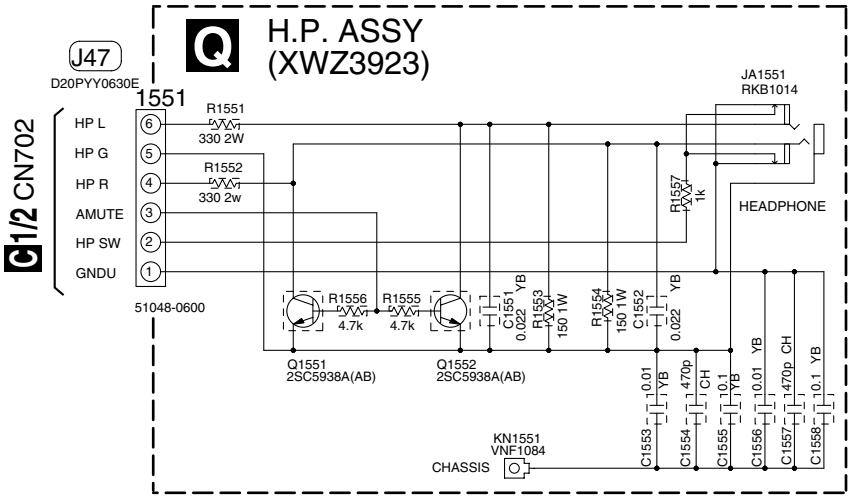
F

3.11 FRONT DISPLAY, R. ENCODER, P. SW&FUNC KEY and F. KEY ASSYS




NOTE
1.RESISTORS
Unit: k-kΩ, M-MΩ or Ω unless otherwise noted.
Rated power: 1/16W unless otherwise noted.
Tolerance: (J) ±5% unless otherwise noted.
2.CAPACITORS
Unit: p-pF or µF unless otherwise noted.
Ratings: Capacity(µF)/Voltage(V) unless otherwise noted.
Rated Voltage: 50V expect for electrolytic capacitors.
3.TACT SWITCHES
Indicated in VSG1024
O
P. SW &
FUNC. KEY ASSY
(XWZ3917)
(402 FL HOLDER VNF1096)
CN471
501
PWRON
GNDU
KEY3B
KEY3A
52151-0410
J41
D20PYY0411E
51048-0400
S501 POWER
S502 TUNING +
S503 TUNING -
S504 STATION +
S505 STATION -
POWER SW ASSY
S501 : POWER
STANDBY/ON
S502 : TUNING +
S503 : TUNING -
S504 : STATION +
S505 : STATION -
CN450
52151-0910
J40
D20PYY0907E
550
51048-0900
KEY3A
KEY3B
GND
ENTER
VDD
KEY1
KEY2
KEY3
KEY4
IC401
PE5420A
S460 MUTE
S461 *1
S462 *1
S463 DVR/VCR
S464 TV/SAT
S465 DVD 5.1
S466 DVD/LD
S467 CD
S468 CDR/TAPE
S469 FM
S470 AM
S457 ADVANCED SURROUND
S458 STANDARD
S459 TUNER EDIT
S451 STEREO/DIRECT
S452 SIGNAL SELECT
S453 SPEAKER IMPEDANCE
S454 VSB MODE
S455 TONE
S456 QUICK SETUP
KEY IN VOLTAGE (V)
P FRONT KEY ASSY
(XWZ3912)
*1 D415/KU
S461 FL DIMMER
S462 INPUT ATT
FRONT KEY ASSY
S451 : STEREO/DIRECT
S452 : SIGNAL SELECT
S453 : SPEAKER IMPEDANCE
S454 : VSB MODE
S455 : TONE
S456 : QUICK SETUP
S457 : ADVANCED SURROUND
S458 : STANDARD
S459 : TUNER EDIT
S460 : MUTE
S461 : FL DIMMER
S462 : INPUT ATT
S463 : DVD/VCR
S464 : TV/SAT
S465 : DVD5.1
S466 : DVD/LD
S467 : CD
S468 : CDR/TAPE
S469 : FM
S470 : AM

3.12 H.P. ASSY



NOTE

1.RESISTORS
Unit: k-kΩ, M-MΩ or Ω unless otherwise noted.
Rated power: 1/10W unless otherwise noted.
Tolerance: (J) ± 5% unless otherwise noted.

2.CAPACITORS
Unit: p-pF or µF unless otherwise noted.
Ratings: Capacity(µF)/Voltage(V) unless otherwise noted.
Rated Voltage: 50V expect for electrolytic capacitors.

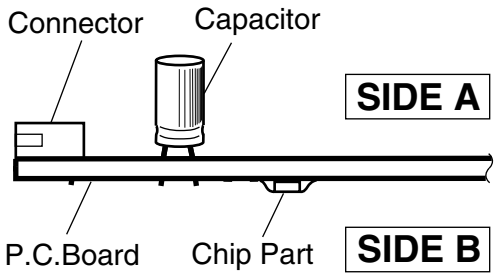
4. PCB CONNECTION DIAGRAM

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.

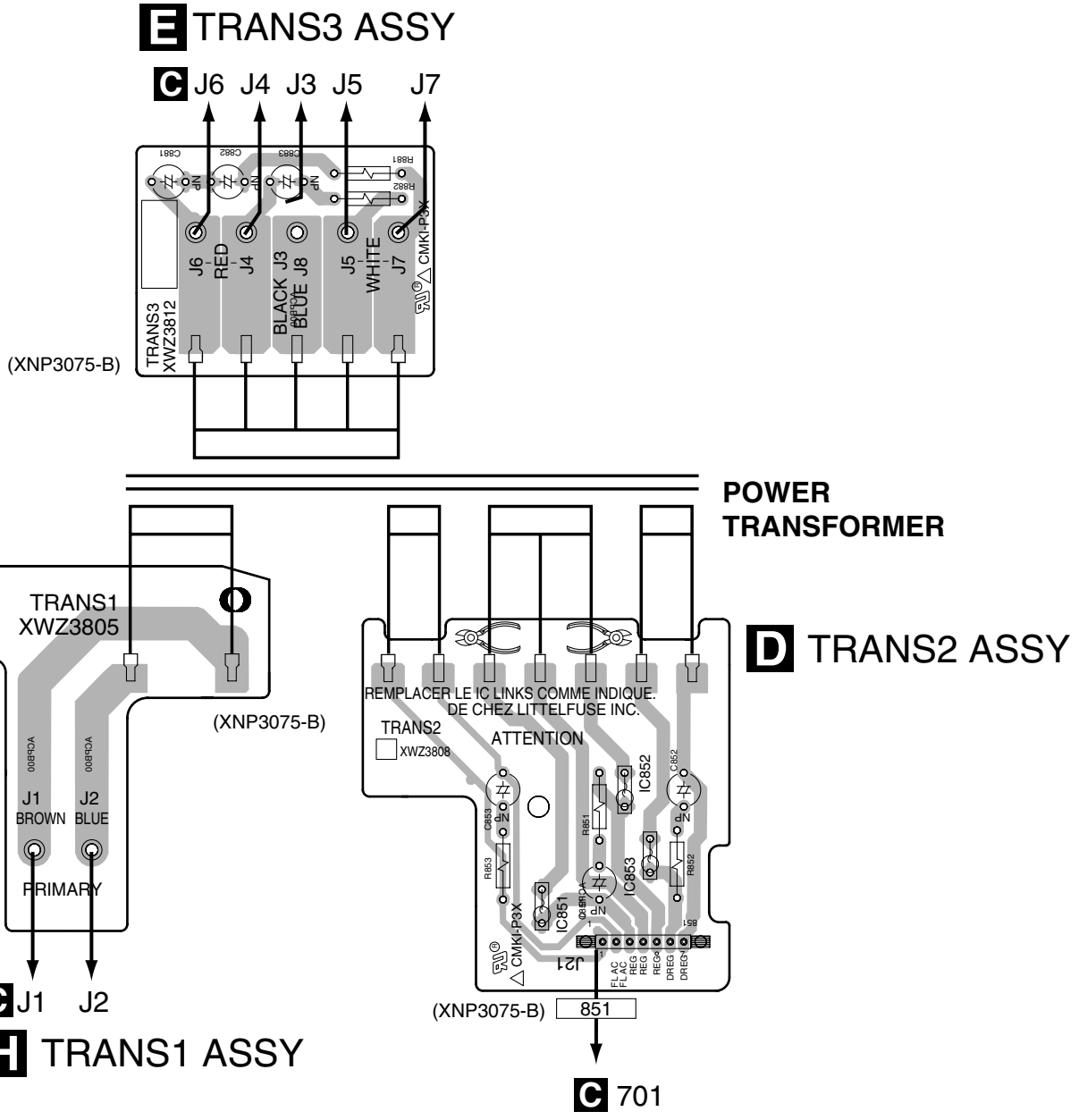
Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
B C E	B C E B C E	Transistor
B C E	B C E B C E	Transistor with resistor
D G S	D G S D G S	Field effect transistor
		Resistor array
		3-terminal regulator

3. 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. View point of PCB diagrams.



4.1 TRANS2, TRANS3 and TRANS1 ASSYS

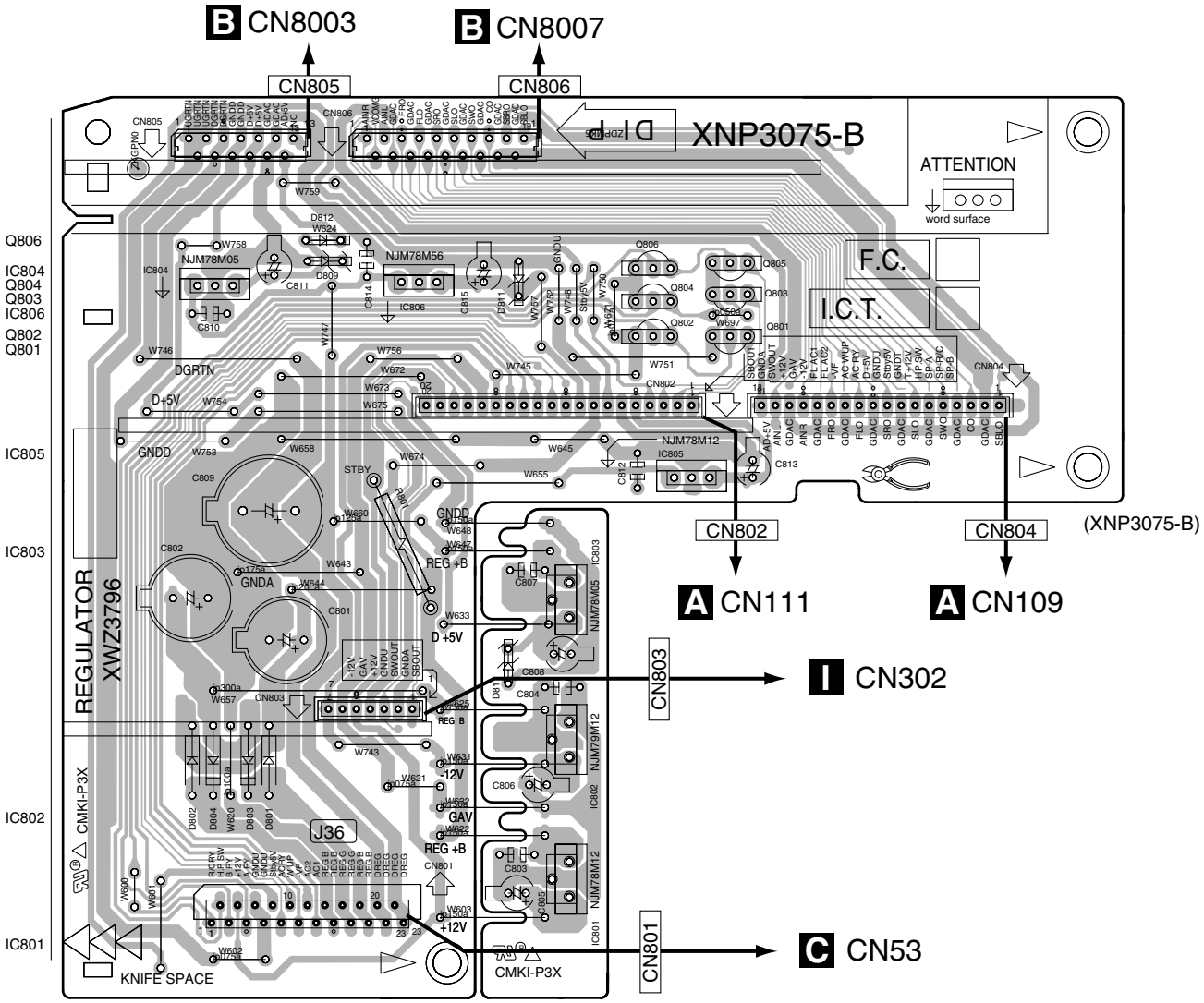
SIDE A **SIDE A**



4.2 REGULATOR ASSY

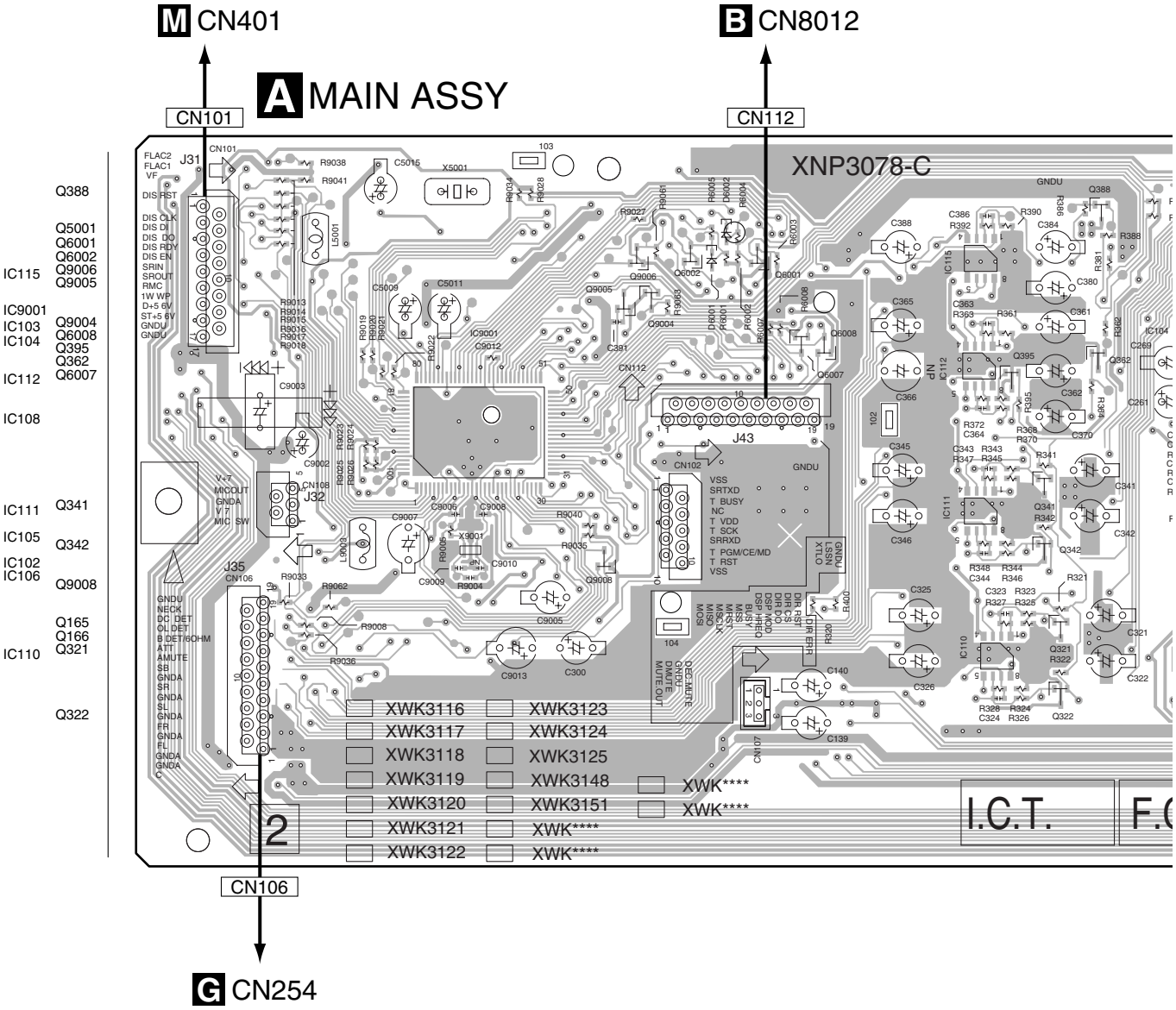
SIDE A **SIDE A**

F REGULATOR ASSY

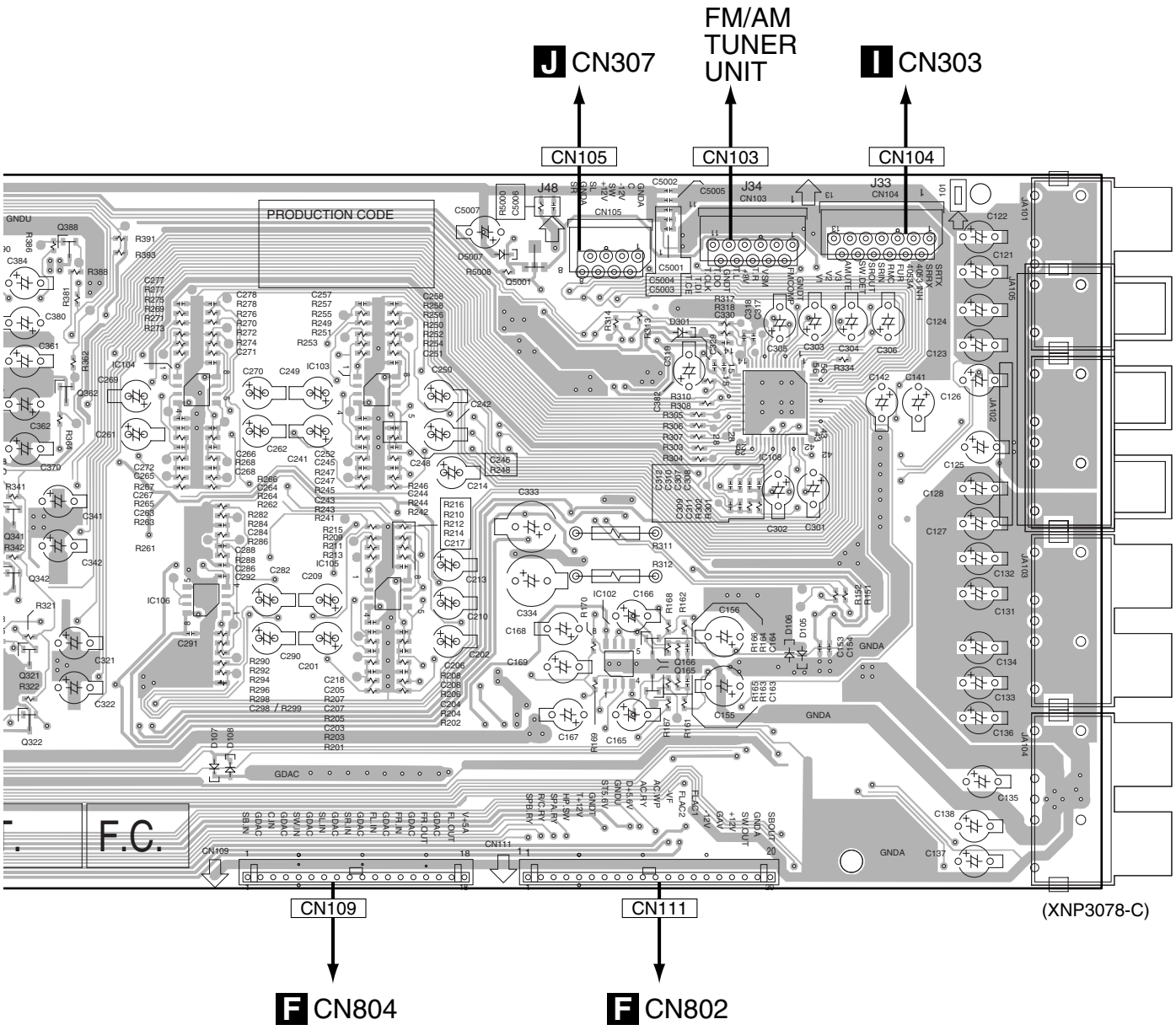


4.3 MAIN ASSY

SIDE A

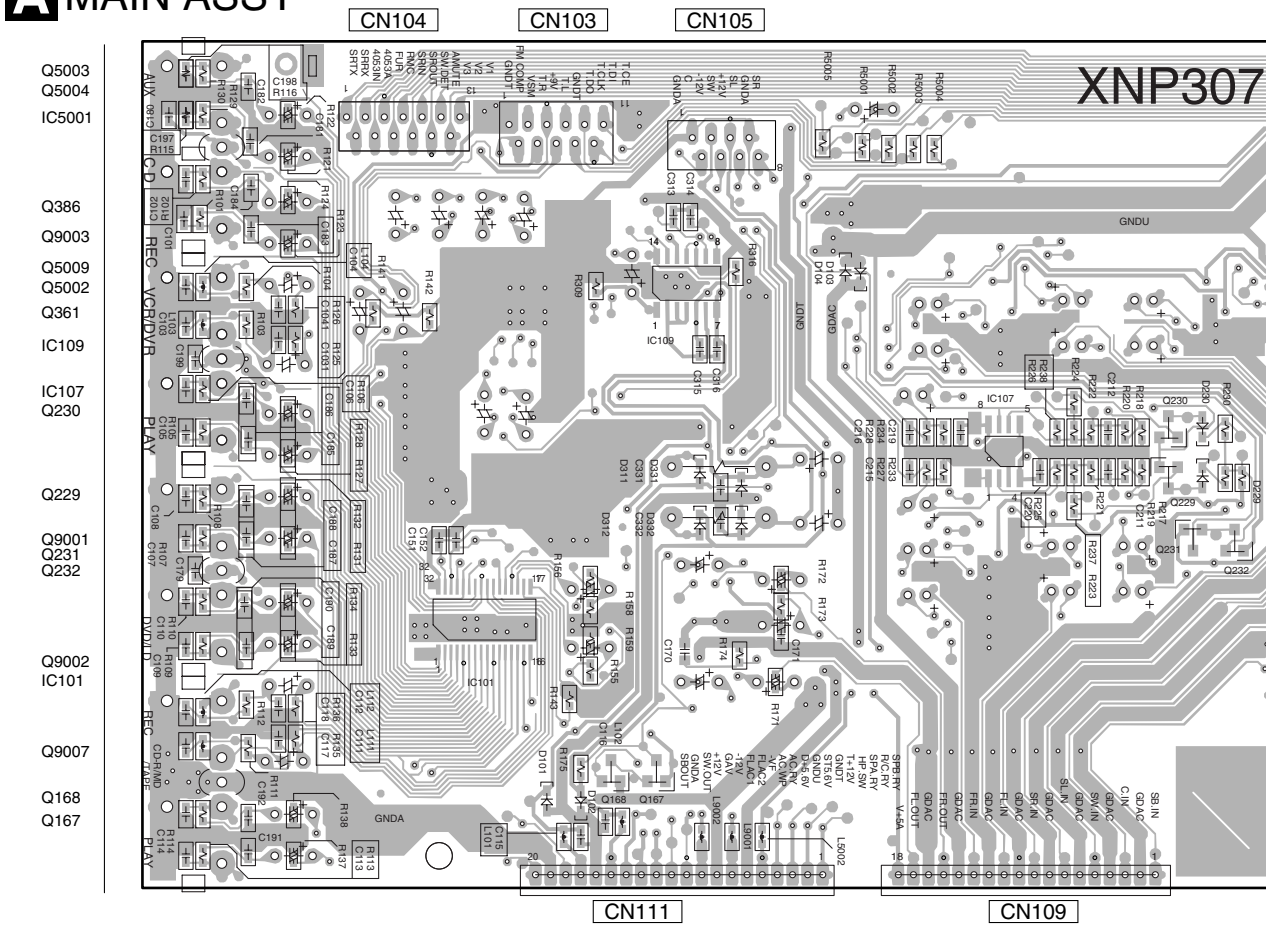


SIDE A

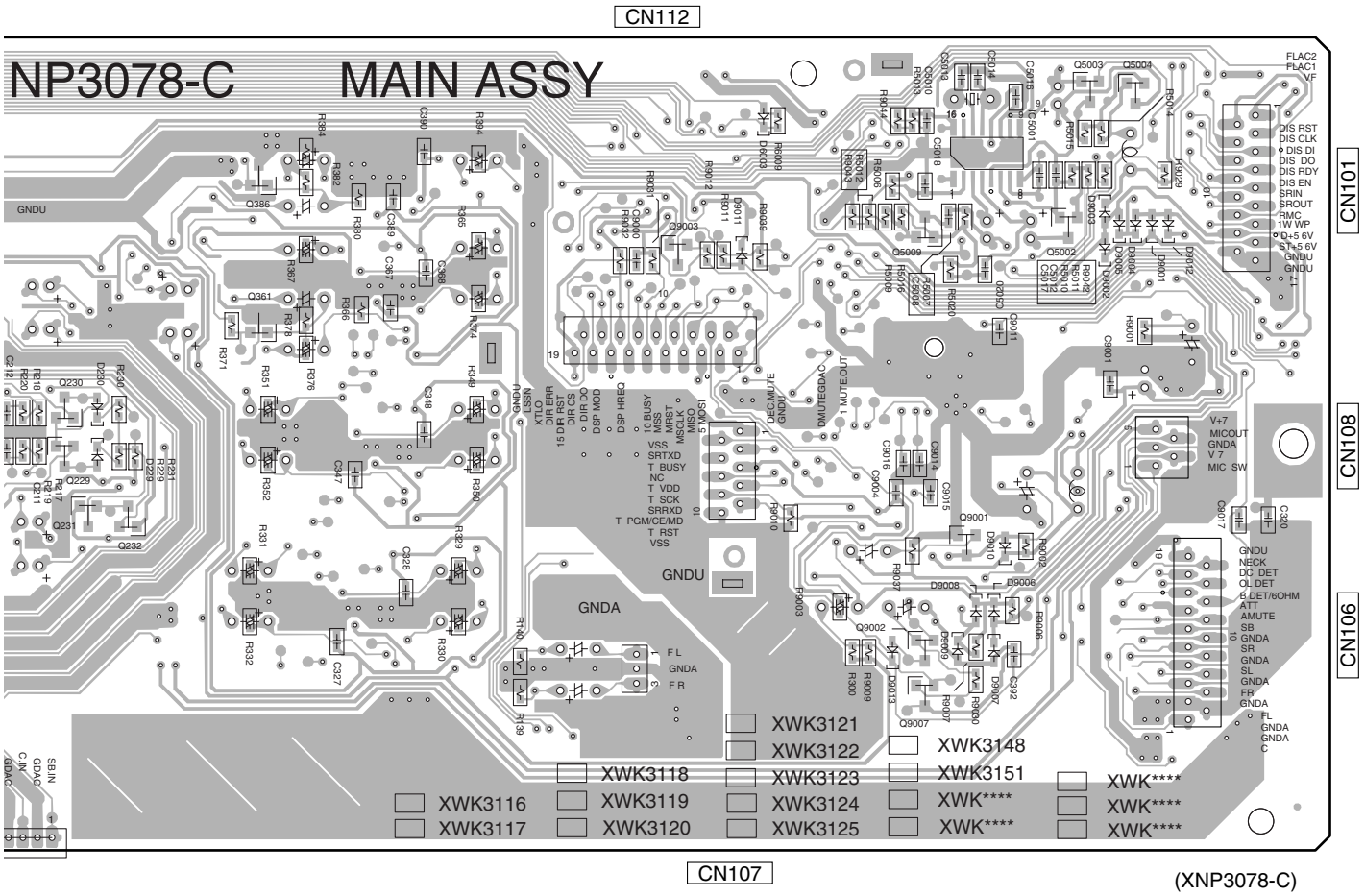

J CN307
FM/AM TUNER UNIT
I CN303
CN105
CN103
CN104
PRODUCTION CODE
CN109
CN111
(XNP3078-C)
F CN804
F CN802

SIDE B

A MAIN ASSY



SIDE B



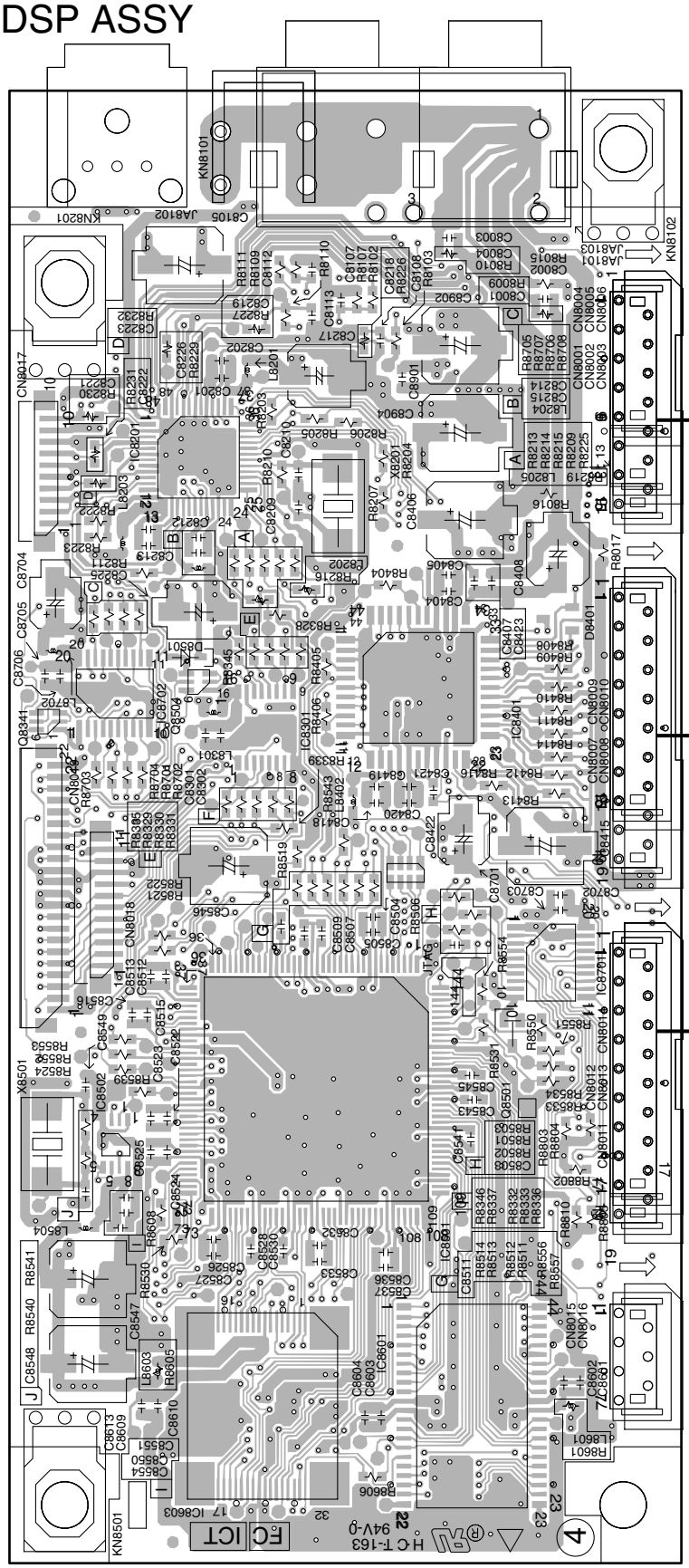
(XNP3078-C)

4.4 DSP ASSY

SIDE A

B DSP ASSY

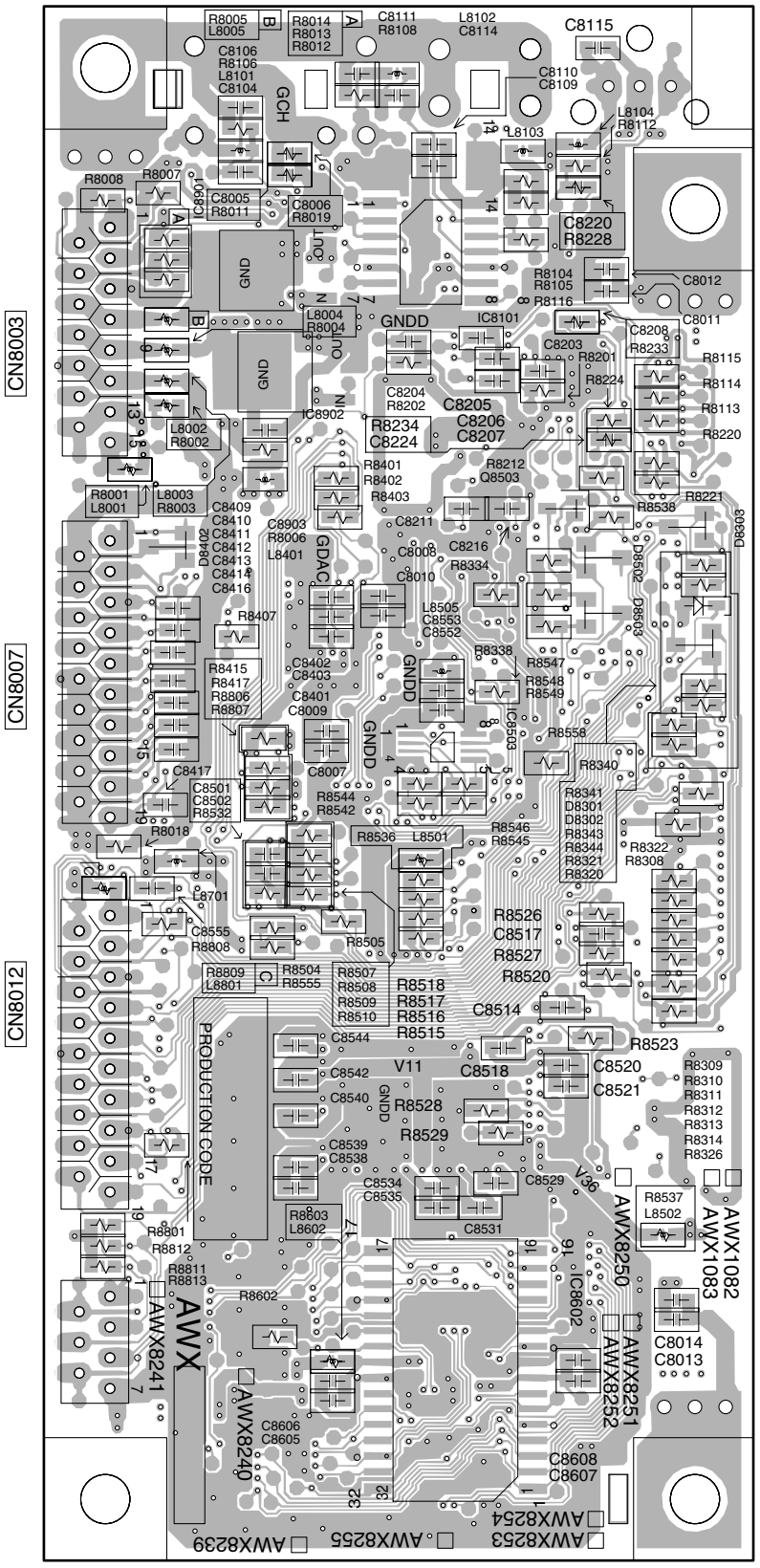
SIDE A



B B

B DSP ASSY

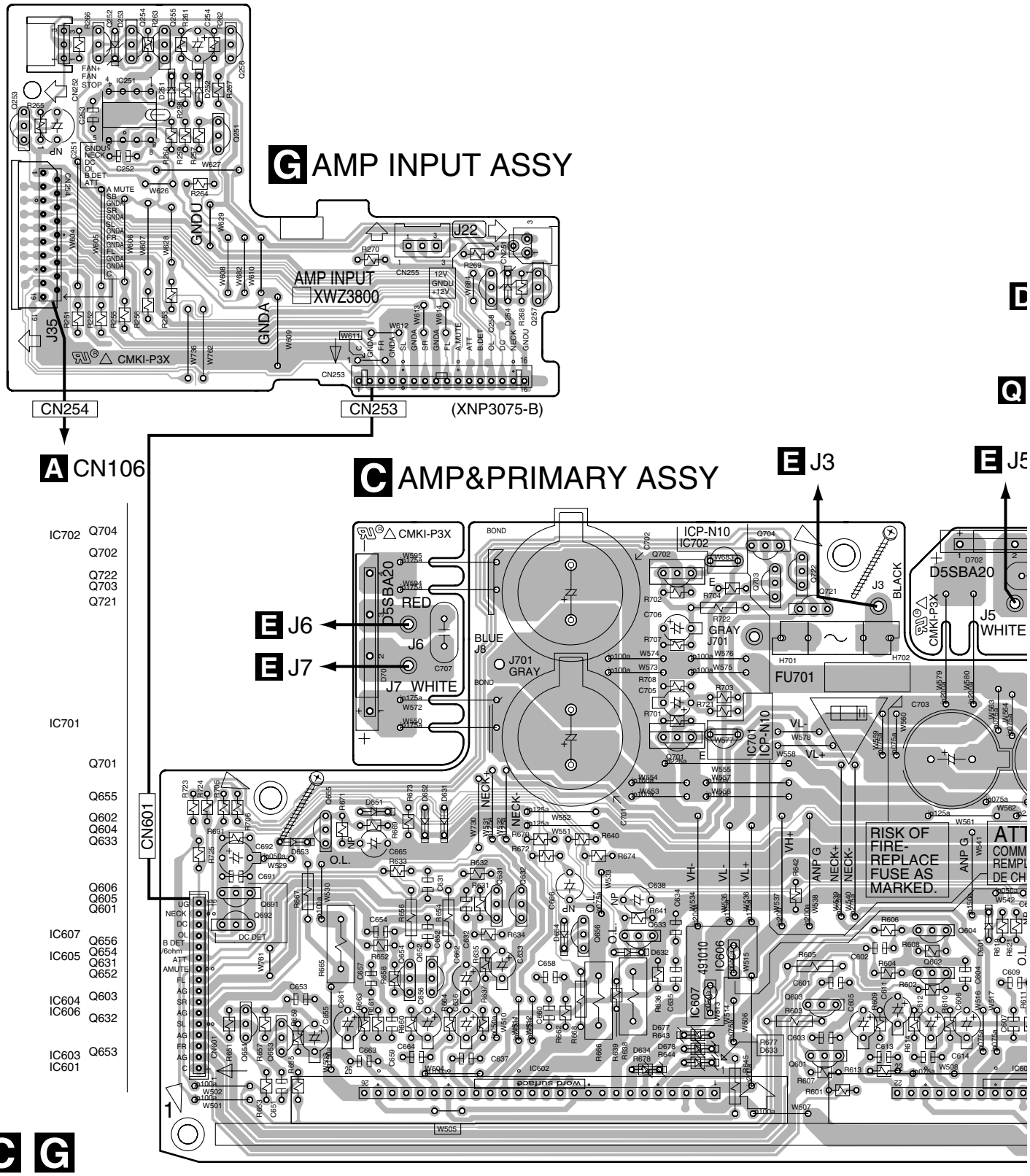
SIDE B

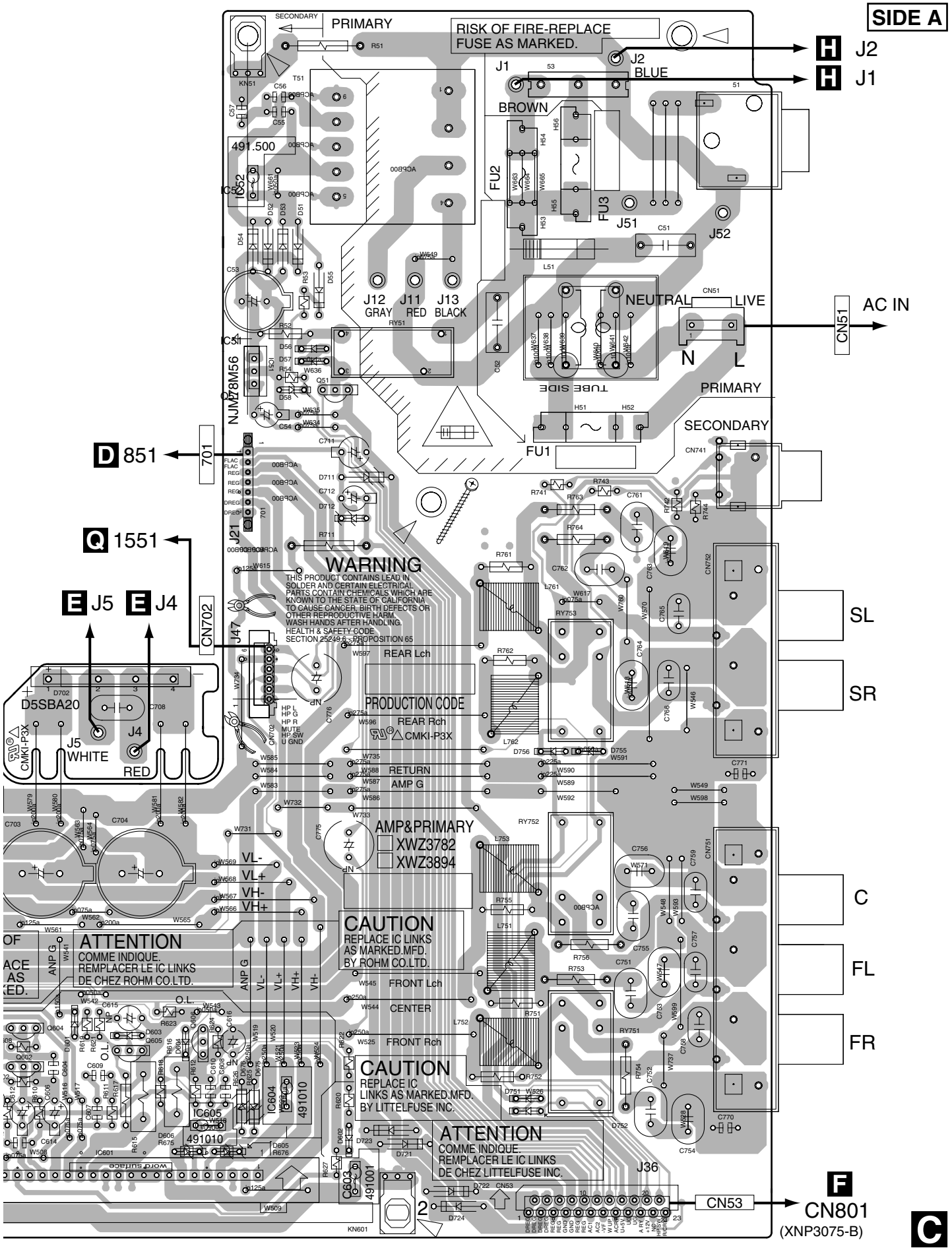


(ANP2022-B)

4.5 AMP & PRIMARY and AMP INPUT ASSYS

SIDE A

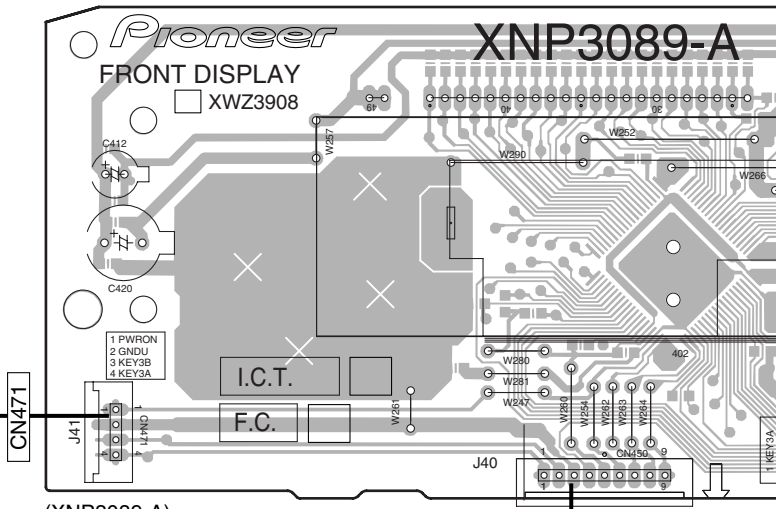


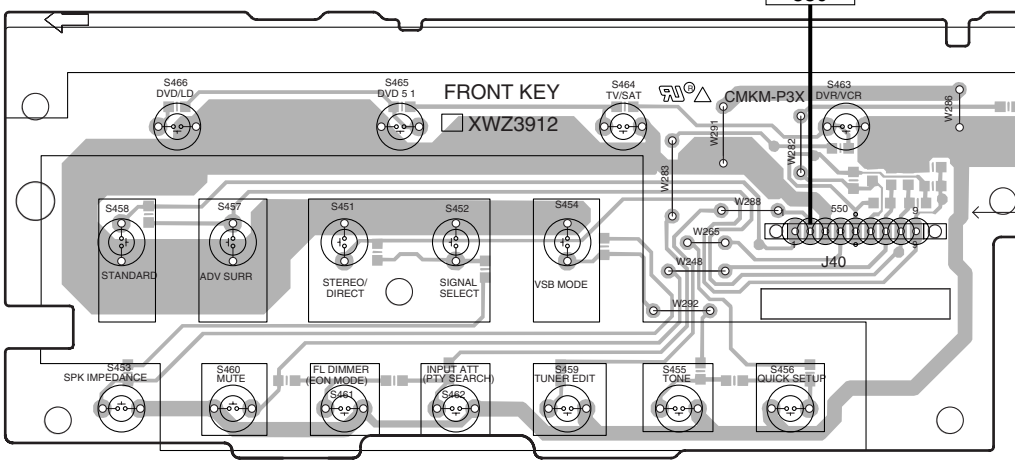

SIDE A
SECONDARY
PRIMARY
RISK OF FIRE-REPLACE FUSE AS MARKED.
H J2
H J1
J2 BLUE
J1
BROWN
491.500
IC52
FU2
FU3
J51
J52
J12 GRAY
J11 RED
J13 BLACK
NEUTRAL
LIVE
CN51
AC IN
N L
TUBE SIDE
PRIMARY
SECONDARY
FU1
IC51 NJM78M56
D 851
701
Q 1551
E J5 E J4
CN702
J47
J21
WARNING
THIS PRODUCT CONTAINS LEAD IN SOLDER AND CERTAIN ELECTRICAL PARTS CONTAIN CHEMICALS WHICH ARE KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER, BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM. WASH HANDS AFTER HANDLING. HEALTH & SAFETY CODE SECTION 25249.6 - PROPOSITION 65
REAR Lch
PRODUCTION CODE
REAR Rch
CMKI-P3X
RETURN
AMP G
AMP&PRIMARY
XWZ3782
XWZ3894
VL-
VL+
VH-
VH+
CAUTION
REPLACE IC LINKS AS MARKED.MFD. BY ROHM CO.LTD.
FRONT Lch
CENTER
FRONT Rch
CAUTION
REPLACE IC LINKS AS MARKED.MFD. BY LITTELFUSE INC.
ATTENTION
COMME INDIQUE.
REMPLACER LE IC LINKS DE CHEZ ROHM CO.LTD.
ATTENTION
COMME INDIQUE.
REMPLACER LE IC LINKS DE CHEZ LITTELFUSE INC.
D5SBA20
J5 WHITE
J4 RED
SL
SR
C
FL
FR
J36
CN53
F
CN801
(XNP3075-B)
C

4.6 F. DISPLAY, R. ENCODER, P. SW & FUNC KEY, H. P. and F. KEY ASSYS

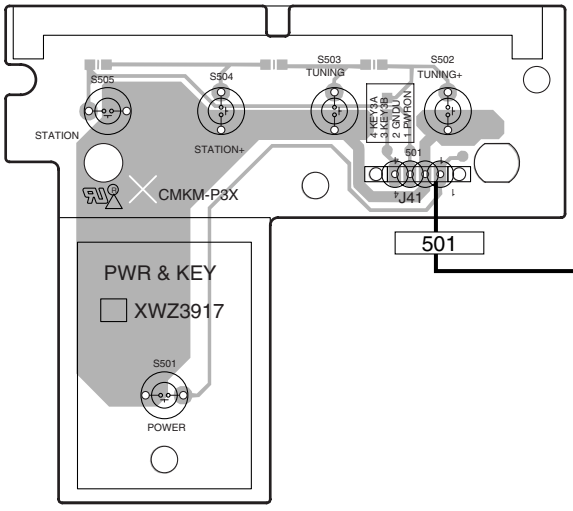
SIDE A

M FRONT DISPLAY ASSY



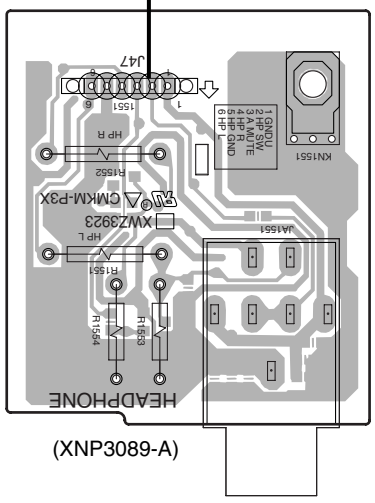


O P. SW & FUNC. KEY ASSY



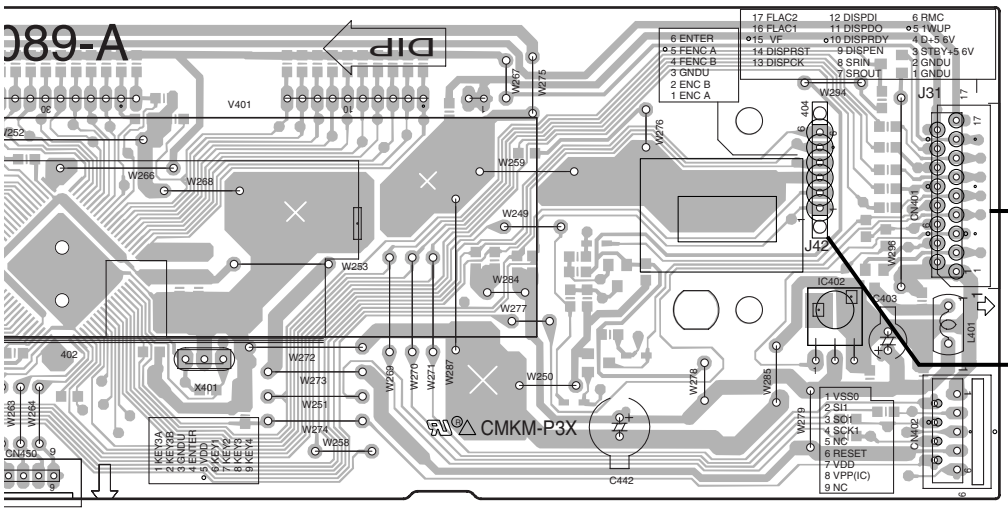
C CN702

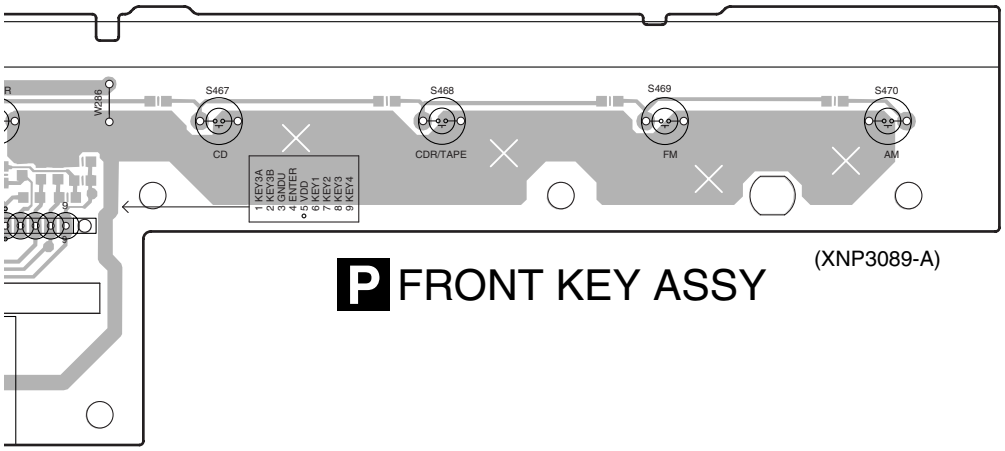
Q H.P ASSY



M O P Q

SIDE A

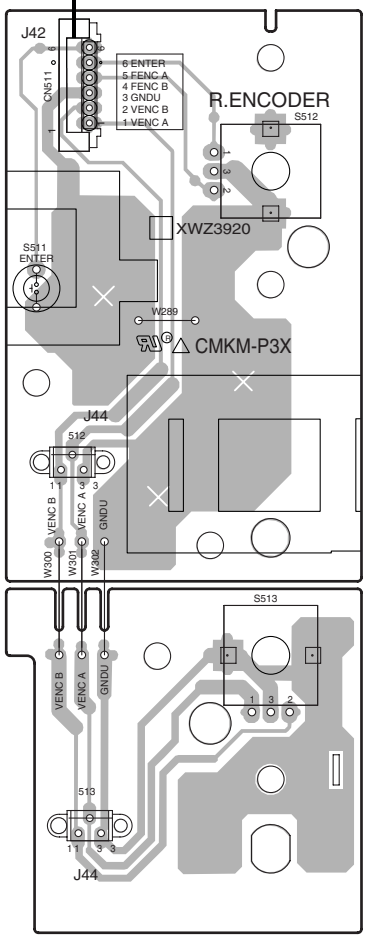




P FRONT KEY ASSY

(XNP3089-A)

CN511

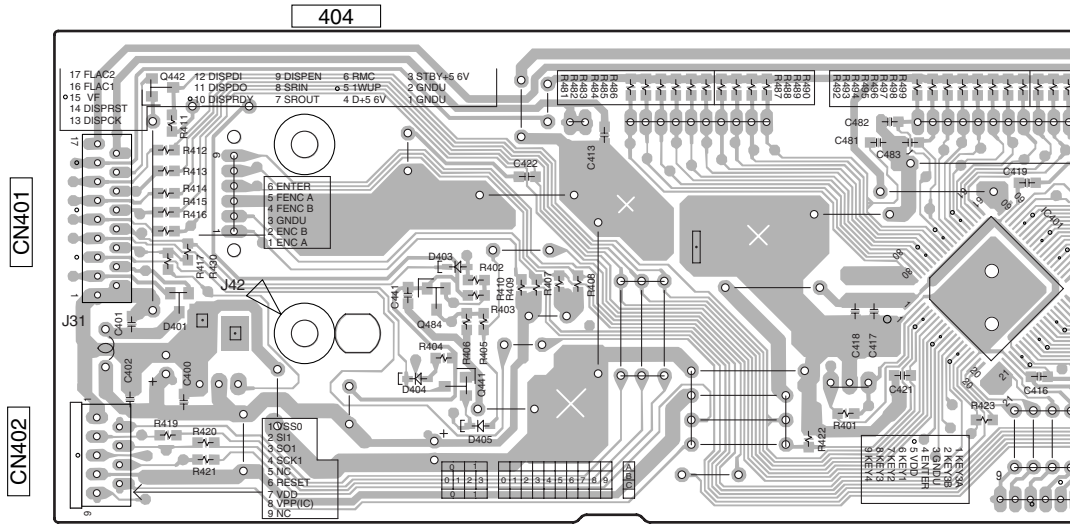


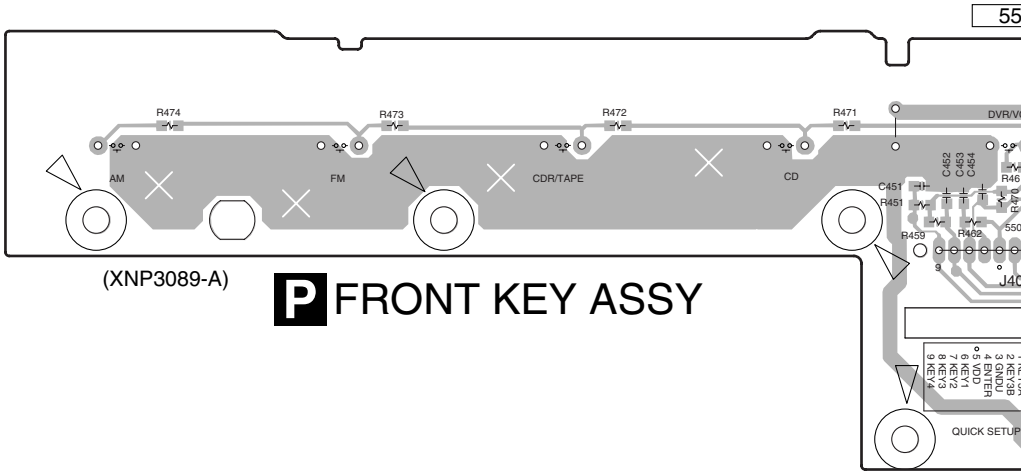
N R.ENCODER ASSY

(XNP3089-A)

M N P

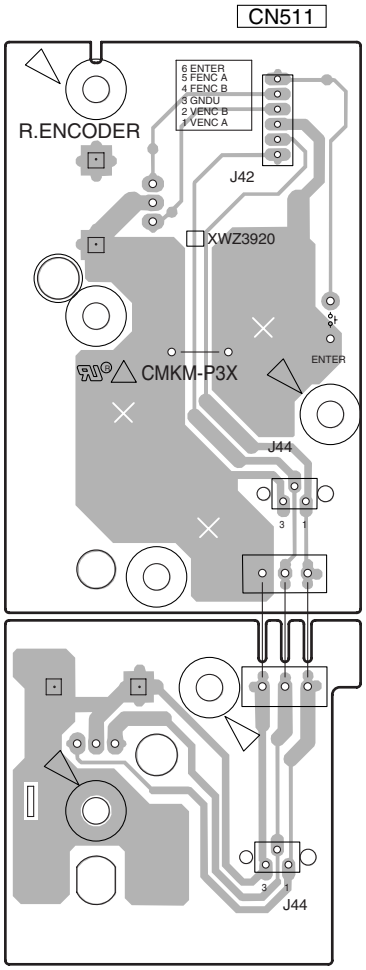
SIDE B





(XNP3089-A)

P FRONT KEY ASSY

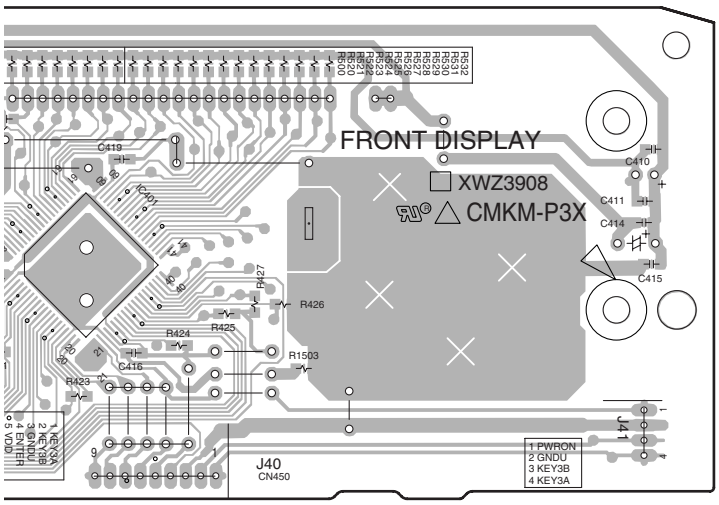


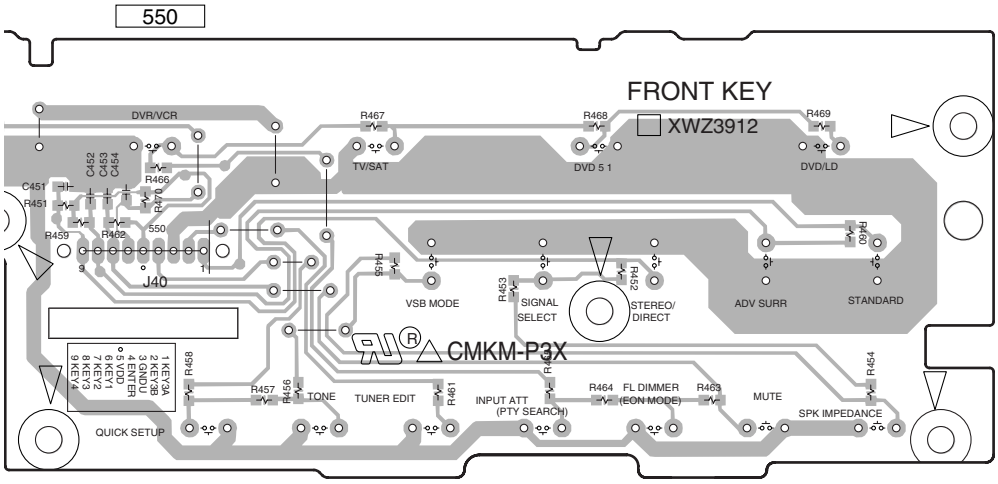
(XNP3089-A)

N R.ENCODER ASSY

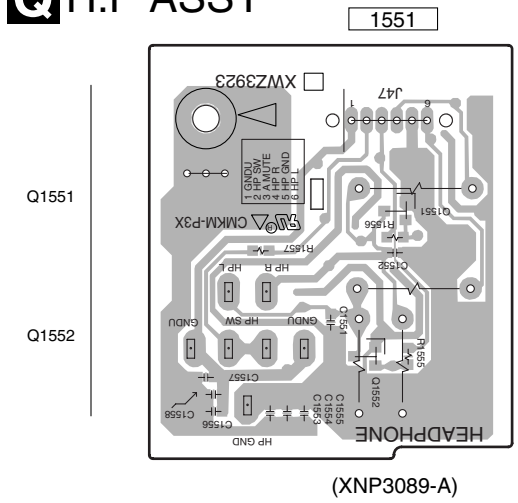
M N P

M FRONT DISPLAY ASSY

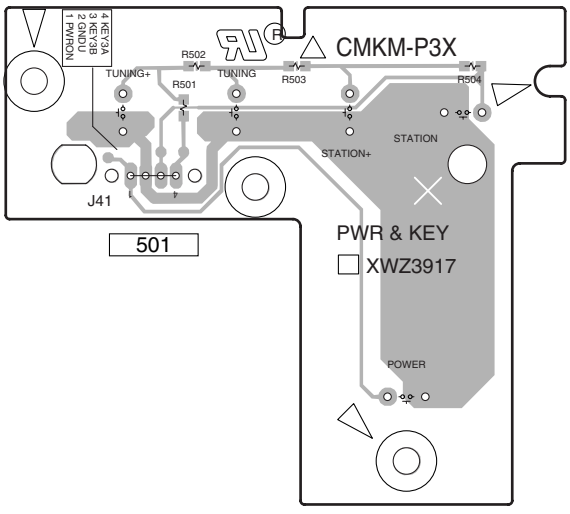




Q H.P ASSY



O P. SW & FUNC. KEY ASSY

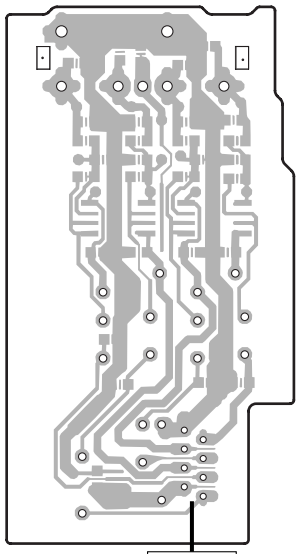


4.7 VIDEO and 5.1CH ASSYS

SIDE A

SIDE A

J 5.1CH ASSY



(XNP3089-A)

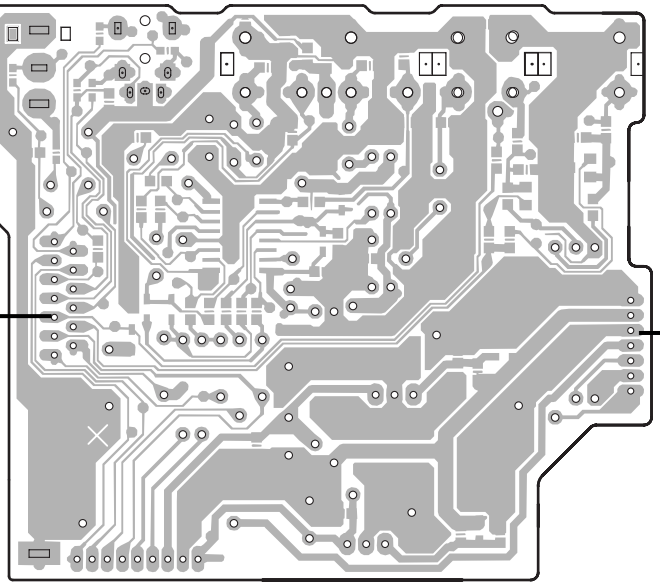
CN307

A CN105

I VIDEO ASSY

A CN104

CN303



CN302

F CN803

Q302

Q301

(XNP3089-A)

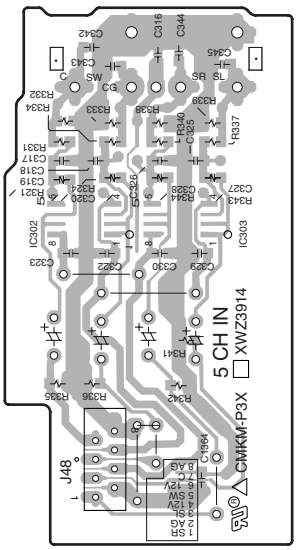
I **J**

I **J**

SIDE B

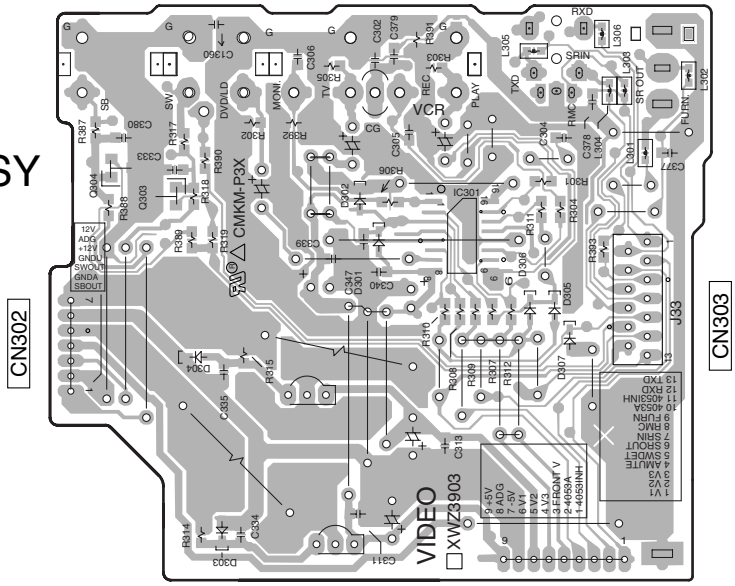
SIDE B

J 5.1CH ASSY



(XNP3089-A)

I VIDEO ASSY



(XNP3089-A)

5. ELECTRICAL 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.*
- *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%).

560 Ω	→ *56 x 10[1]* →	*561*	*RD1/4PU 5 6 1 J*
47k Ω	→ *47 x 10[3]* →	*473*	*RD1/4PU 4 7 3 J*
0.5 Ω	→ *R50*		*RN2H R 5 0 K*
1 Ω	→ *1R0*		*RS1P 1 R 0 K*

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

5.62k Ω	→ *562 x 10[1]* →	*5621*	*RN1/4PC 5 6 2 1 F*

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
	1	MAIN ASSY	XWK3148
	1	DSP ASSY	AWX8418
NSP	1	AMP & PS ASSY	XWK3152
	2	AMP & PRIMARY ASSY	XWZ3894
	2	TRANS2 ASSY	XWZ3808
	2	TRANS3 ASSY	XWZ3812
	2	REGULATOR ASSY	XWZ3796
	2	AMP INPUT ASSY	XWZ3800
	2	TRANS1 ASSY	XWZ3805
NSP	1	COMPLEX ASSY	XWK3166
	2	VIDEO ASSY	XWZ3903
	2	5.1CH ASSY	XWZ3914
	2	FRONT DISPLAY ASSY	XWZ3908
	2	R.ENCODER ASSY	XWZ3920
	2	P.SW & FUNC.KEY ASSY	XWZ3917
	2	FRONT KEY ASSY	XWZ3912
	2	H.P. ASSY	XWZ3923
	1	FM/AM TUNER UNIT	AXX7172

AMP & PS ASSY

OTHERS

Mark	No.	Description	Part No.
	J21	JUMPER WIRE	D20PYY0715E
	J6	LEAD WIRE UNIT	DB215NB0

COMPLEX ASSY

OTHERS

Mark	No.	Description	Part No.
	J41	JUMPER WIRE 4P	D20PYY0411E
	J42	6P JUMPER WIRE	D20PYY0608E
	J47	JUMPER WIRE 6P	D20PYY0630E
	J40	JUMPER WIRE 7P	D20PYY0907E

A MAIN ASSY

SEMICONDUCTORS

Mark	No.	Description	Part No.
	IC108		BD3813KS
	IC101		BD3841FS
	IC103–IC105, IC107		HA17558AF
	IC102		NJM2100M
	IC9001		PD5963C
	IC110–IC112		UPC4570G2
	Q165, Q166, Q321, Q322		2SC3326
	Q341, Q342, Q361, Q362, Q395		2SC3326
	Q5001		2SD1664
	Q229, Q230		2SK208
	Q167, Q231, Q9002-Q9005		DTA124EK
	Q9008		DTA143TK
	Q232		DTC124EK
	Q168, Q9001		DTC143EK
	Q9007		DTC143TK
	D103–D108, D229, D230, D301		1SS355
	D311, D312, D9001-D9013		1SS355
	D101, D102		RB501V-40
	D5007		UDZS10(B)
	D331, D332		UDZS6R8(B)

COILS AND FILTERS

Mark	No.	Description	Part No.
	L9001,L9002	CHIP SOLID INDUCTOR	ATL7002
	L9003		LFEA2R2J
	L101–L104, L111, L112, L5002	CHIP SOLID INDUCTOR	QTL1013

CAPACITORS

Mark	No.	Description	Part No.
	C9003 (0.22F/5.6V)		ACH7144
	C151, C152, C243, C244, C263		CCSRCH101J50
	C317, C318, C323, C324		CCSRCH101J50
	C343, C344, C363		CCSRCH101J50
	C1031,C1041,C117, C118		CCSRCH220J50
	C205–C208, C245–C248, C265		CCSRCH331J50
	C267		CCSRCH331J50
	C203, C204		CCSRCH471J50
	C366		CEANP4R7M50
	C123–C128, C131–C138		CEAT100M50
	C141, C142, C167, C168		CEAT100M50
	C209, C210, C213, C214		CEAT100M50
	C249, C250, C269, C270		CEAT100M50
	C301–C306, C321, C322		CEAT100M50
	C341, C342, C361, C362		CEAT100M50
	C5007		CEAT101M16
	C169		CEAT221M6R3
	C201, C202, C241, C242		CEAT2R2M50
	C261, C262, C9005		CEAT2R2M50
	C9007		CEAT331M6R3
	C325, C326, C345, C346, C365		CEAT470M25
	C155, C156		CEAT470M50
	C333, C334		CEAT471M10

Mark No.	Description	Part No.
	C9013	CEAT471M6R3
	C165, C166, C370	CEAT4R7M50
	C170	CKSQYB104K16
	C320, C392, C5001,C9015,C9016	CKSRYB102K50
	C115, C116, C153, C154, C171	CKSRYB103K50
	C179, C180, C199, C215–C218	CKSRYB103K50
	C251, C252, C266, C271, C272	CKSRYB103K50
	C319, C327–C330, C347, C348	CKSRYB103K50
	C367, C368, C5002,C9004,C9008	CKSRYB103K50
	C9017	CKSRYB103K50
	C219, C220, C309–C312	CKSRYB104K16
	C5003,C9006	CKSRYB105K10
	C264	CKSRYB223K25
	C257, C258, C277, C278	CKSRYB472K50
	C307, C308, C364	CKSRYB472K50
	C9011,C9014	CKSRYB473K16
	C268	CKSRYB562K50
	C391	CKSRYF104Z16

RESISTORS

⚠	R171, R172	RS1/16S470J
⚠	R173, R174	RS1/16S472J
⚠	R311, R312	RS1LMF101J
	Other Resistors	RS1/16S###J

OTHERS

	CN105 8P CONNECTOR	52044-0845
	CN103 11P CONNECTOR	52044-1145
	CN104 13P CONNECTOR	52044-1345
	CN101 17P CONNECTOR	52045-1745
	CN106, CN112 19P CONNECTOR	52045-1945
	CN109 18P 6P PIN JACK	KP200TA18L
⚠	CN111 20P SOCKET	KP200TA20L
	JA103, JA104 PCB BINDER	XKB3017
	JA105 6P PIN JACK	XKB3037
	X9001 CERAMIC RESONATOR (15.7MHz)	XSS3004

B DSP ASSY

SEMICONDUCTORS

	IC8201	AK4114VQ
	IC8401	AK4628VQE
	IC8501	DSPD56367PV150
	IC8901	NJM2391DL1-33
	IC8902	NJU7223DL1-18
	IC8101	TC74HCU04AF
	IC8701	TC74LVX244FT
	IC8702	TC74VHCT244AFT
	IC8502	TC7WU04FU
	Q8504	UMD2N
	Q8503	UN5112
	D8501	1SS355
	D8401	DAN202K
	D8402,D8502,D8503	DAP202K

COILS AND FILTERS

	L8002,L8004,L8501,L8502 CHIP SOLID INDUCTOR	ATL7002
	L8101-L8104,L8201,L8203,L8204	QTL1013
	L8401,L8402,L8504,L8701,L8702 CHIP SOLID INDUCTOR	QTL1013

Mark No.	Description	Part No.

CAPACITORS

	C8209,C8210	CCSRCH100D50
	C8421	CCSRCH101J50
	C8107,C8112	CCSRCH470J50
	C8007,C8008,C8109,C8201,C8212	CCSRCH471J50
	C8214,C8404,C8409-C8414	CCSRCH471J50
	C8416,C8417,C8419,C8505,C8507	CCSRCH471J50
	C8509,C8511,C8512,C8515,C8518	CCSRCH471J50
	C8520,C8522,C8524,C8526,C8528	CCSRCH471J50
	C8530,C8532,C8534,C8536,C8539	CCSRCH471J50
	C8541,C8543,C8545,C8551,C8703	CCSRCH471J50
	C8706	CCSRCH471J50
	C8548,C8549	CCSRCH8R0D50
	C8701,C8704	CEVW100M16
	C8105,C8406,C8415,C8546,C8547	CEVW101M16
	C8902,C8904	CEVW101M16
	C8217,C8225,C8408	CEVW470M6R3
	C8204,C8555	CKSRYB102K50
	C8009,C8104,C8114,C8405,C8418	CKSRYB103K50
	C8517,C8554	CKSRYB103K50
	C8010,C8115,C8202,C8207,C8213	CKSRYB104K16
	C8215,C8407,C8420,C8422,C8504	CKSRYB104K16
	C8513,C8521,C8523,C8525,C8527	CKSRYB104K16
	C8529,C8531,C8533,C8535	CKSRYB104K16
	C8537,C8538,C8540,C8542,C8544	CKSRYB104K16
	C8550,C8702,C8705,C8901,C8903	CKSRYB104K16
	C8110,C8516	CKSRYB105K6R3
	C8514	CKSRYB333K16
	C8203	CKSRYB473K50

RESISTORS

	R8506	RAB4C101J
	R8201	RS1/16S1802F
	Other Resistors	RS1/16S###J

OTHERS

	CN8012 19P CONNECTOR	52045-1945
	JA8101 2P PIN JACK	AKB7131
	JA8102 OPT. LINK IN	GP1FA513RZB
	CN8017 10P CONNECTOR	VKN1414
	CN8003 13P SOCKET	XKP3077
	CN8007 19P SOCKET	XKP3080
	X8501 CRYSTAL RESONATOR (20MHz)	VSS1171
	X8201 CRYSTAL RESONATOR (24.576MHz)	XSS3003

C AMP & PRIMARY ASSY

SEMICONDUCTORS

⚠	IC603 PROTECTOR(1A)	AEK7009
⚠	IC604–IC607 PROTECTOR(10A)	AEK7022
⚠	IC701, IC702 IC PROTECTOR	ICP-N10
⚠	IC51	NJM78M56FA
⚠	IC601	PAC010A
⚠	IC602	PAC011A
	Q703, Q721	2SA1145
⚠	Q702	2SA2005
	Q691, Q692	2SC1740S
	Q704, Q722	2SC1845
	Q605, Q606, Q633, Q655, Q656	2SC2240
⚠	Q701	2SC5511

Mark	No.	Description	Part No.
	Q601–Q604, Q631, Q632		2SC5974A
	Q651–Q654		2SC5974A
	Q51		DTC143ES
	D56, D601–D604, D631, D632		1SS133
	D651–D654, D752, D756		1SS133
⚠	D701, D702		D5SBA20(B)
	D675–D678		MTZJ16A
	D711		MTZJ22D
	D58, D712		MTZJ5.1B
⚠	D51–D55, D721–D724		S5688G

COILS AND FILTERS

	L751–L753, L761, L762 AF COIL	ATH1004

SWITCHES AND RELAYS

⚠	RY51	XSR3006
	RY751–RY753	XSR3007

CAPACITORS

	C707, C708 (0.01/AC250V)	ACG1005
	C607–C610, C634, C635	CCPUCH6R8K50
	C657–C660	CCPUCH6R8K50
	C615, C616, C638, C665, C666	CEANP2R2M50
	C775, C776	CEANP470M50
	C712	CEAT101M10
	C611, C612, C636, C661, C662	CEAT101M16
	C711	CEAT101M35
	C53	CEAT102M16
	C692	CEAT221M10
	C54	CEAT470M25
	C605, C606, C633, C655, C656	CEAT4R7M50
	C705, C706	CEHAT100M2A
	C613, C614, C637, C663, C664	CKPUYB101K50
	C691	CKPUYB102K50
	C603, C604, C632, C653, C654	CKPUYB331K50
	C55–C57	CKPUYF103Z25
	C751, C752, C755, C761, C762	CQMBA104J50
	C51, C52	XCG3009
	C703, C704 (3300/42V)	XCH3012
	C701, C702 (5600/71V)	XCH3013

RESISTORS

⚠	R615, R616, R638, R665, R666	ACN7094
	(0.22 /5W)	ACN7094
⚠	R51 (2.2M 1/2W)	RCN1080
⚠	R52	RD1/2PM270J
⚠	R751, R752, R755, R761, R762	RD1/4PUF101J
⚠	R753, R754, R756, R763, R764	RS1LMF4R7J
⚠	R711	RS2LMF392J
	Other Resistors	RD1/4PU###J

OTHERS

	CN53 23P CONNECTOR	52045-2345
	CN702 6P JUMPER CONNECTOR	52147-0610
	CN741 2P PIN JACK	AKB7008
	51 AC SOCKET 1-P	AKP1060
	H51–H54, H701, H702 FUSE CLIP	AKR7001
⚠	T51 STANDBY TRANSFORMER	ATT7043
	CN601 16P PLUG	KM200TA16
⚠	CN51 AC CODE SOCKET	RKP1751
	KN51, KN601 EARTH METAL FITTING	VNF1084
	CN752 4P SPEAKER TERMINAL	XKE3010
	CN751 6P SPEAKER TERMINAL	XKE3012
	701 7P CABLE HOLDER	XKP3047

D TRANS2 ASSY

SEMICONDUCTORS

⚠	IC851–IC853 PROTECTOR(1.6A)	AEK7012

OTHERS

	851 7P CABLE HOLDER	XKP3047

E TRANS3 ASSY

TRANS3 ASSY has no service part.

F REGULATOR ASSY

SEMICONDUCTORS

⚠	IC803, IC804	NJM78M05FA
⚠	IC801, IC805	NJM78M12FA
⚠	IC806	NJM78M56FA
⚠	IC802	NJM79M12FA
	Q801, Q803	DTA124ES
	Q802, Q804	DTC114ES
	D809–D811	MTZJ6.2B
⚠	D801–D804	S5688G

CAPACITORS

	C811, C815	CEAT101M10
	C813	CEAT101M16
	C801, C802	CEAT222M25
	C809	CEAT472M16
	C808	CEHAT101M10
	C805, C806	CEHAT101M16
	C803, C804, C807, C810, C812	CKPUYF103Z25
	C814	CKPUYF103Z25

RESISTORS

	R801	RS3LMF331J

OTHERS

	CN801 23P CONNECTOR	52045-2345
	CN804 18P PLUG	KM200TA18
	CN802 20P PLUG	KM200TA20
	CN803 7P PLUG	KM200TA7
	CN805 13P PLUG	XKP3066
	CN806 19P PLUG	XKP3069

G AMP INPUT ASSY

OTHERS

	CN254 19P CONNECTOR	52044-1945
	CN253 16P SOCKET	KP200TA16L

H TRANS1 ASSY

TRANS1 ASSY has no service part.

I VIDEO ASSY

SEMICONDUCTORS

Mark No.	Description	Part No.
	IC301	NJM2595M
	Q302	2SA1515
	Q301	2SC3377
	Q303	2SC5938A
	D301, D302, D305, D306	1SS355
	D303, D304	UDZS6R2(B)

CAPACITORS

	C347	CCSRCH470J50
	C307–C310, C312, C314, C338	CEAT470M25
	C1360,C302	CKSRYB103K50
	C339, C340	CKSRYB104K25
	C304–C306	CKSRYB221K50
	C333	CKSRYB331K50
	C311, C313	CKSRYB473K25

RESISTORS

⚠	R313, R316	RS3LMF560J
	Other Resistors	RS1/16S###J

OTHERS

	CN303 13P CONNECTOR	52044-1345
	CN302 7P SOCKET	KP200TA7L
	390 PCB BINDER	VEF1040
	JA308 6P PIN JACK	XKB3049

J 5.1CH ASSY

CAPACITORS

	C342–C345	CCSRCH101J50
	C321, C324, C331, C332	CEAT4R7M50
	C1364	CKSRYB102K50
	C316	CKSRYB103K50
	C317, C318, C325, C326	CKSRYB221K50

RESISTORS

	All Resistors	RS1/16S###J

OTHERS

	CN307 8P CONNECTOR	52044-0845
	CN309 PIN JACK (4P)	XKB3035

M FRONT DISPLAY ASSY

SEMICONDUCTORS

	IC402	GP1UM27XK0VF
	IC401	PE5420A
	Q484	2SA1037K
	Q442	DTC124EK
	D403	1SS355
	D401	DAN202K

COILS AND FILTERS

	L401	LFEA2R2J

CAPACITORS

	C482, C483	CCSRCH221J50
	C481	CCSRCH471J50
	C442	CEAL470M10
	C403	CEAT221M6R3
	C412	CEAT470M50
	C415	CKSRYB102K50
	C401, C402, C410, C411, C419	CKSRYB103K50
	C441	CKSRYB103K50
	C418, C421	CKSRYB104K16
	C420	XCH3011

RESISTORS

	All Resistors	RS1/16S###J

OTHERS

	404 6P CABLE HOLDER	51048-0600
	CN401 17P CONNECTOR	52044-1745
	CN471 4PJUMPER CONNECTOR	52151-0410
	CN450 9PJUMPER CONNECTOR	52151-0910
	CN402 FFC CONNECTOR 9P	52492-0920
	V401 FL TUBE	XAV3022
	X401 CERAMIC RESONATOR (5MHZ)	VSS1142

N R.ENCODER ASSY

SWITCHES AND RELAYS

	S511	VSG1024
	S513	XSX3005
	S512	XSX3006

OTHERS

	CN511 7P CABLE HODER	52147-0610

O P.SW & FUNC. ASSY

SWITCHES AND RELAYS

	S501–S505	VSG1024

RESISTORS

	All Resistors	RS1/16S###J

OTHERS

	501 4P CABLE HOLDER	51048-0400

P FRONT KEY ASSY

SWITCHES AND RELAYS

	S451–S470	VSG1024

CAPACITORS

	C451–C454	CKSRYB102K50

RESISTORS

	All Resistors	RS1/16S###J

OTHERS

	550 9P CABLE HOLDER	51048-0900

Q H.P. ASSY

SEMICONDUCTORS

	Q1551,Q1552	2SC5938A

CAPACITORS

	C1554,C1557	CCSRCH471J50
	C1553,C1556	CKSRYB103K50
	C1555,C1558	CKSRYB104K16
	C1551,C1552	CKSRYB223K50

RESISTORS

⚠	R1553,R1554	RS1LMF151J

Mark	No.	Description	Part No.
⚠	R1551,R1552		RS2LMF331J
	Other Resistors		RS1/16S###J

OTHERS

	1551	6P CABLE HOLDER	51048-0600
	JA1551	HEADPHONE JACK	RKB1014
	KN1551	WRAPPING TERMINAL	VNF1084

FM/AM TUNER UNIT

FM/AM TUNER UNIT has no service part.

6. ADJUSTMENT

There is no information to be shown in this chapter.

7. GENERAL INFORMATION

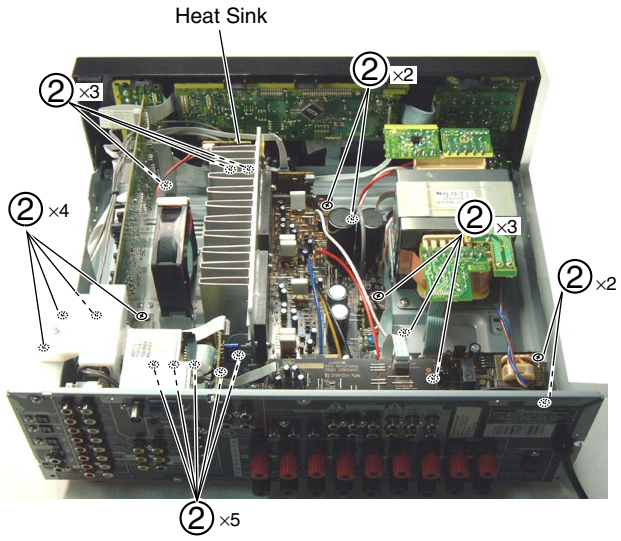
7.1 DIAGNOSIS

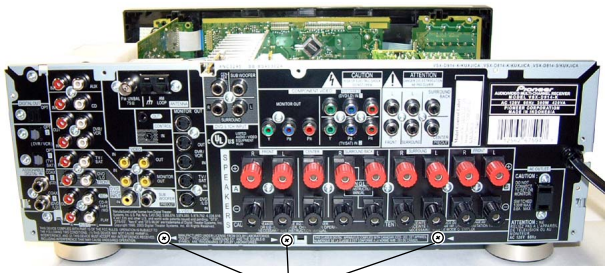
7.1.1 DISASSEMBLY

Note: Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

■ Diagnosis

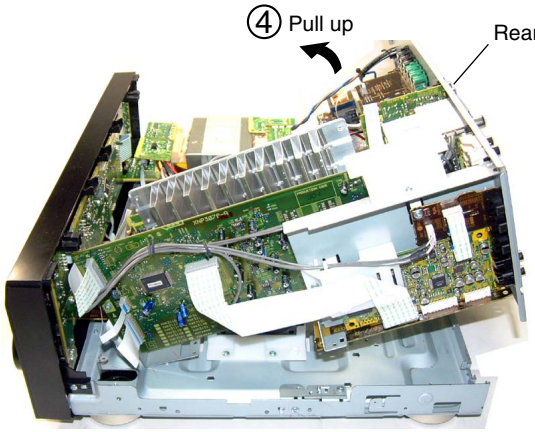
① Remove the top cover (seven screws).



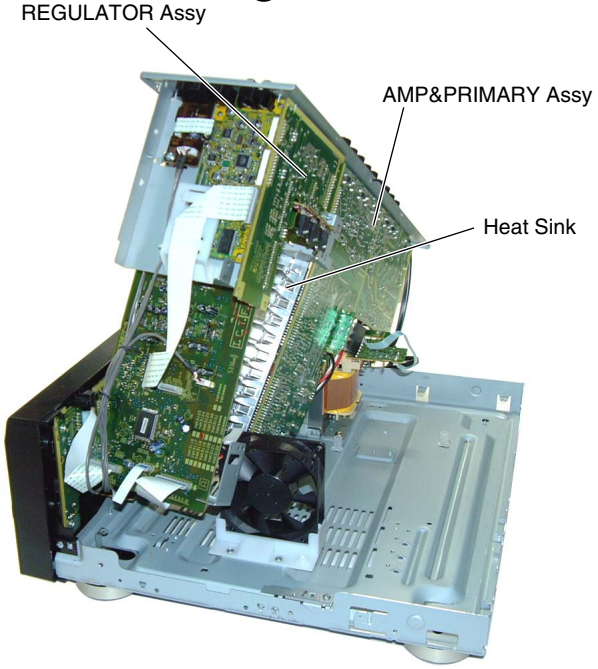


③ ×3

Note : This photograph may show a different model. However, the method for disassembly is the same.



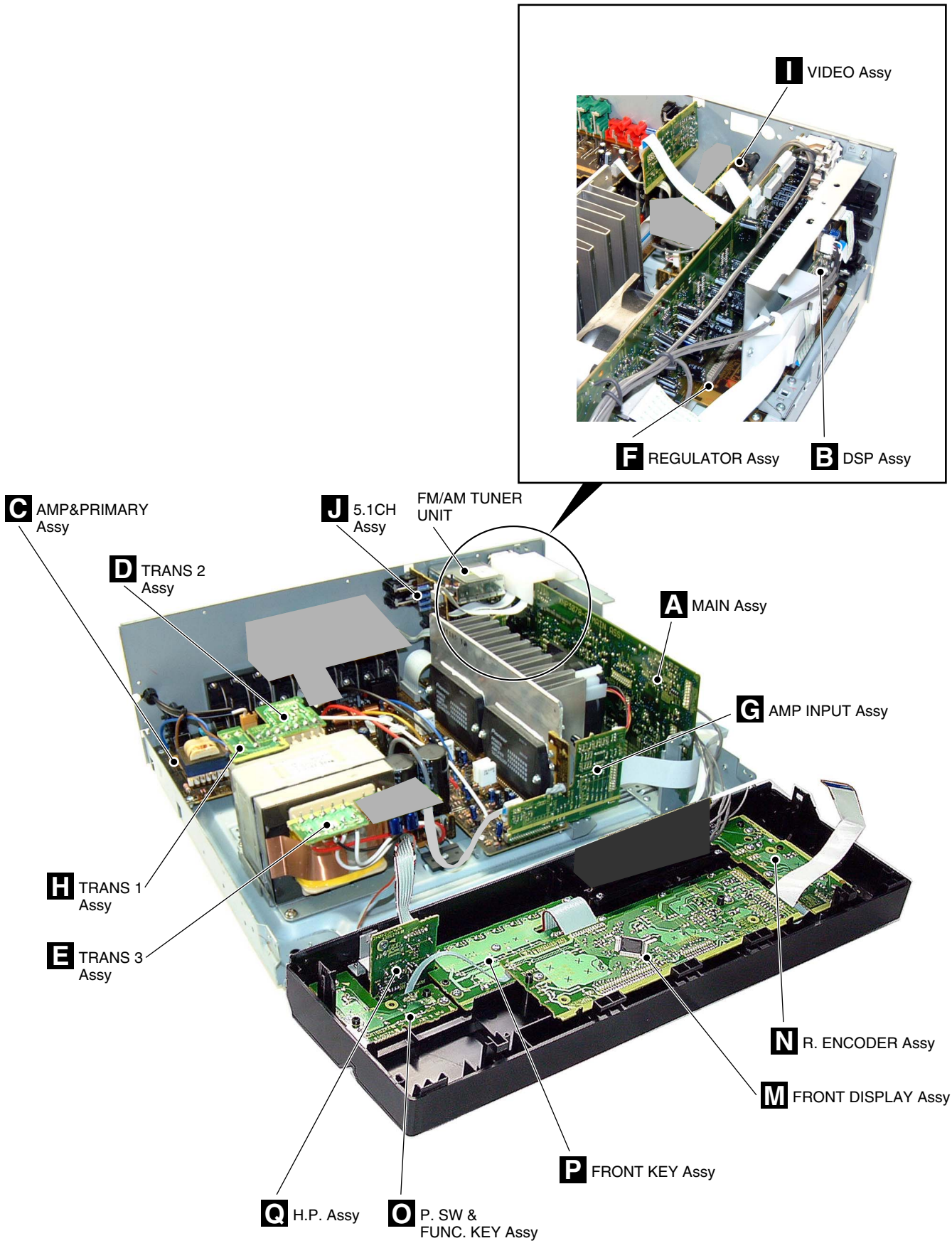
⑤ Diagnosis



Note : This photograph may show a different model. However, the method for disassembly is the same.

Note : The unit does not operate when the screws of Speaker Terminal are taken off from Rear Panel.

Heat-sink caution in the disassembling : Because Heat-sink becomes hot, please pay attention.


I VIDEO Assy
F REGULATOR Assy
B DSP Assy
C AMP&PRIMARY Assy
J 5.1CH Assy
FM/AM TUNER UNIT
D TRANS 2 Assy
A MAIN Assy
G AMP INPUT Assy
H TRANS 1 Assy
E TRANS 3 Assy
N R. ENCODER Assy
M FRONT DISPLAY Assy
P FRONT KEY Assy
Q H.P. Assy
O P. SW & FUNC. KEY Assy

7.2 PARTS
7.2.1 IC

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

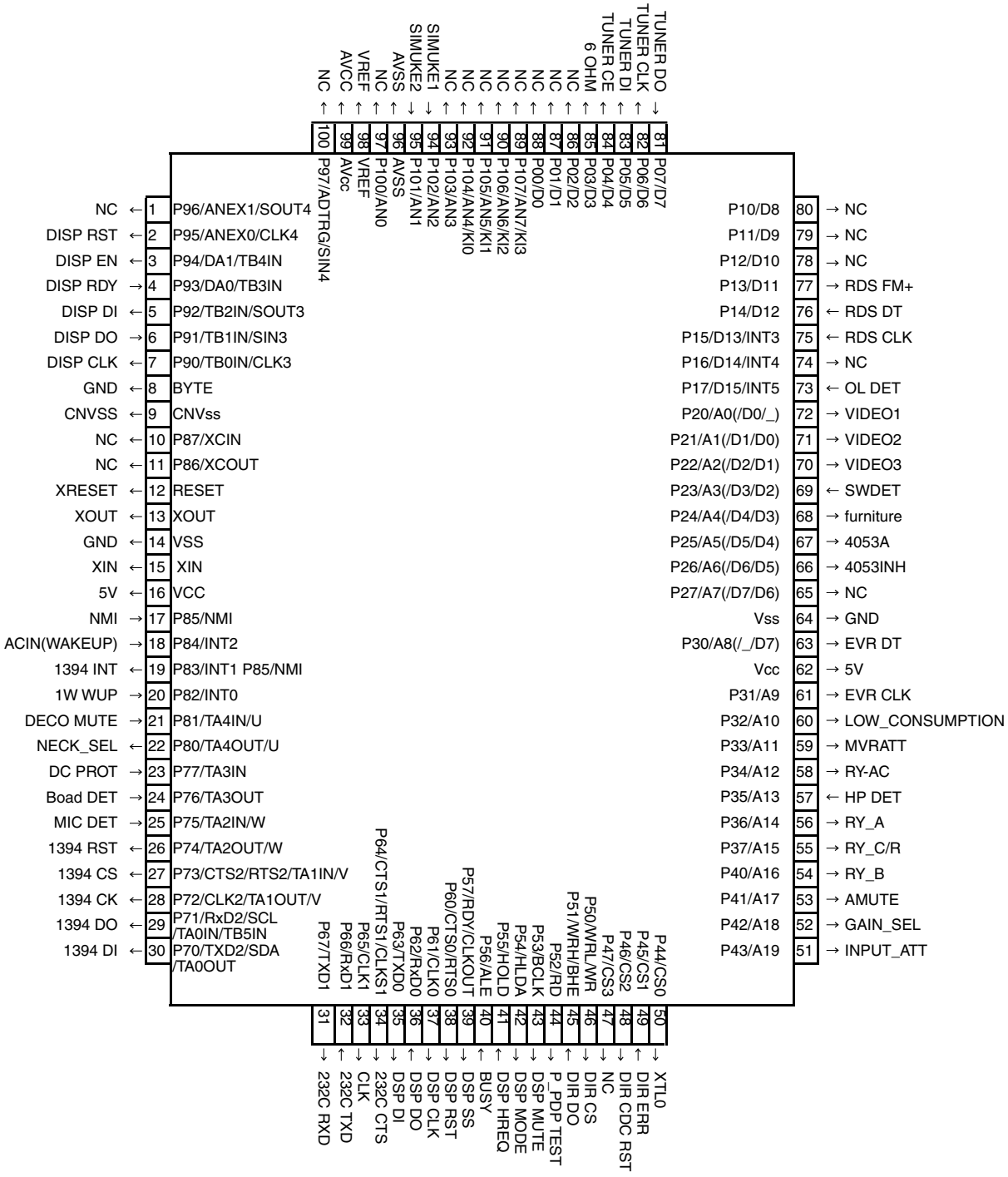
• List of IC

PD5963C, PE5420A

■ PD5963C (MAIN ASSY : IC9001)

• System Control MCU

■ Pin Arrangement (Top View)



• Pin Function

No.	Port	Pin Name	I/O	Pin Function
1	P96/ANEX1/SOUT4	NC	I/O	
2	P95/ANEX0/CLK4	DISP RST	I/O	Reset signal to display u-com
3	P94/DA1/TB4IN	DISP EN	I/O	Enable signal to display u-com
4	P93/DA0/TB3IN	DISP RDY	I/O	Ready signal from display u-com
5	P92/TB2IN/SOUT3	DISP DI	I/O	Data out to display u-com
6	P91/TB1IN/SIN3	DISP DO	I/O	Data input from display u-com
7	P90/TB0IN/CLK3	DISP CLK	I/O	Clock signal to display u-com
8	BYTE	GND		
9	CNVss	CNVSS		
10	P87/XCIN	NC	I/O	
11	P86/XCOUT	NC	I/O	
12	RESET	XRESET	RST	
13	XOUT	XOUT	OSC	
14	VSS	GND	GND	
15	XIN	XIN	OSC	
16	VCC	5V	5V	
17	P85/NMI	NMI	I	No use
18	P84/INT2	ACIN(WAKEUP)	I/O	AC pulse input
19	P83/INT1 P85/NMI	1394 INT	I/O	No use (Standby for 1394)
20	P82/INT0	1W WUP	I/O	Wake up signal from display u-com
21	P81/TA4IN/U	DECO MUTE	I/O	1st DSP Boot success detect port
22	P80/TA4OUT/U	NECK_SEL	I/O	5.1ch, surround mode and A+B Stereo : H / Stereo : L
23	P77/TA3IN	DC PROT	I/O	AMP DC detect
24	P76/TA3OUT	Boad DET	I/O	AMP INPUT ASSY falling off detect, H : detected
25	P75/TA2IN/W	MIC DET	I/O	MIC detect (No Use)
26	P74/TA2OUT/W	1394 RST	I/O	No use (Standby for 1394)
27	P73/CTS2/RTS2/TA1IN/V	1394 CS	I/O	No use (Standby for 1394)
28	P72/CLK2/TA1OUT/V	1394 CK	I/O	No use (Standby for 1394)
29	P71/RxD2/SCL/TA0IN/TB5IN	1394 DO	I/O	No use (Standby for 1394)
30	P70/TXD2/SDA/TA0OUT	1394 DI	I/O	No use (Standby for 1394)
31	P67/TXD1	232C RXD	I/O	No use, fixed to "L" (For rewriting 232C (Data output))
32	P66/RxD1	232C TXD	I/O	No use, fixed to "L" (For rewriting 232C (Data input))
33	P65/CLK1	CLK	I/O	No use (It is necessary when writing for JIG)
34	P64/CTS1/RTS1/CLKS1	232C CTS	I/O	No use, fixed to "L" (For rewriting 232C (Admit communication))
35	P63/TXD0	DSP DI	I/O	Data output signal for communication with DSP and DIR
36	P62/RxD0	DSP DO	I/O	Data input signal for communication with DSP
37	P61/CLK0	DSP CLK	I/O	Clock signal for communication with DSP and DIR
38	P60/CTS0/RTS0	DSP RST	I/O	Reset signal for DSP
39	P57/RDY/CLKOUT	DSP SS	I/O	Slave select signal to DSP
40	P56/ALE	BUSY	I/O	Use it in MCACC
41	P55/HOLD	DSP HREQ	I/O	DSP error detect signal
42	P54/HLDA	DSP MODE	I/O	Mode select of DSP (H : ROMmode, L : RAM(PPP) mode)
43	P53/BCLK	DSP MUTE	I/O	DSP ASSY mute
44	P52/RD	P_PDPTEST	I/O	Fixed to "L" during normal operation. (for SR+ testmode only)
45	P51/WRH/BHE	DIR DO	I/O	Data input signal for communication with DIR/DAC
46	P50/WRL/WR	DIR CS	I/O	Chip select signal for communication with DIR/DAC
47	P47/CS3	NC	I/O	
48	P46/CS2	DIR CDC RST	I/O	Reset signal for DIR CODEC
49	P45/CS1	DIR ERR	I/O	lock/unlock signal
50	P44/CS0	XTL0	I/O	DIR X'tal change

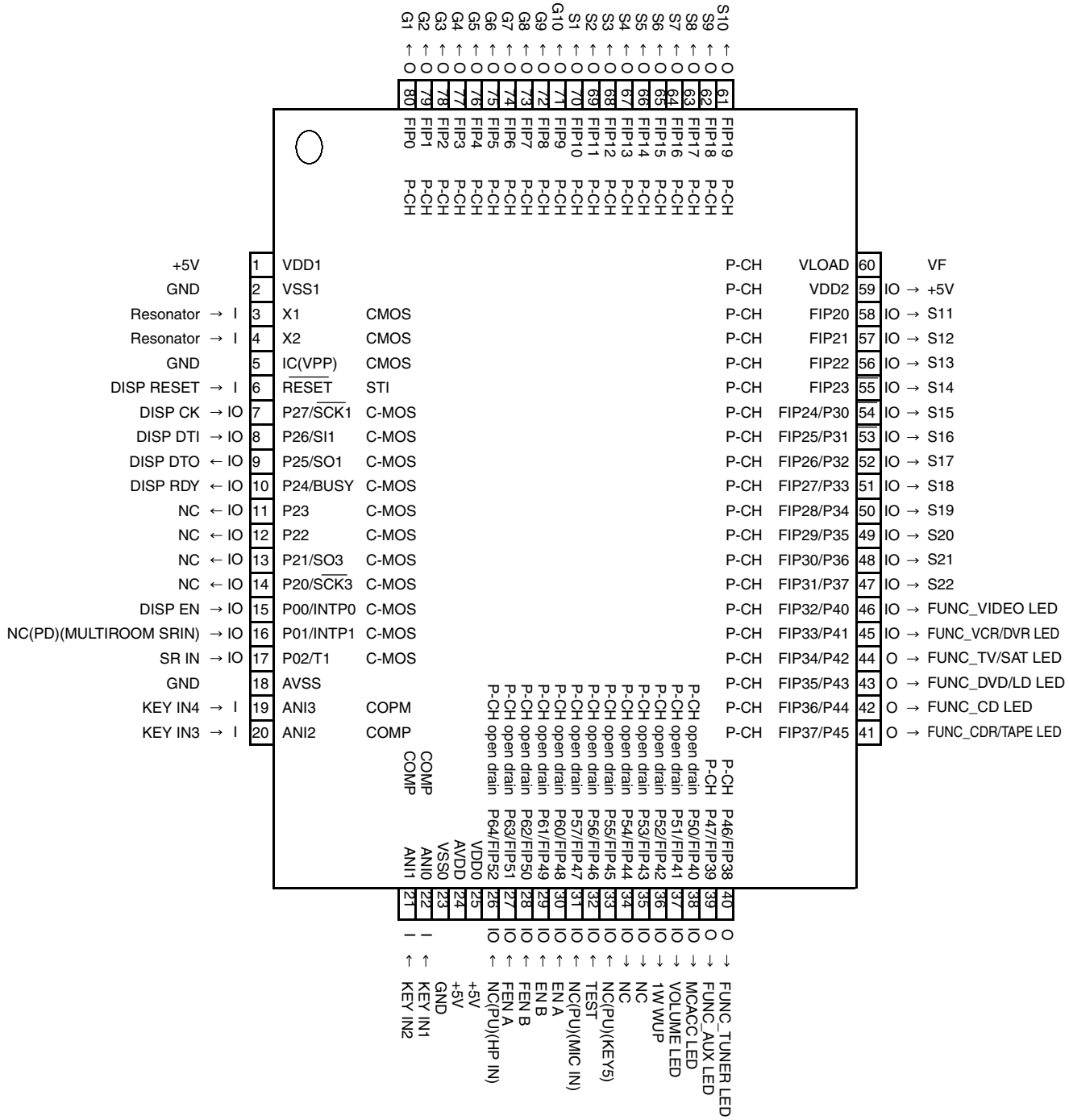
• Pin Function

No.	Port	Pin Name	I/O	Pin Function
51	P43/A19	INPUT_ATT	I/O	Analog input ATT(H : ATT ON)
52	P42/A18	GAIN_SEL	I/O	Gain select (5.1ch and Stereo of analog input : H)
53	P41/A17	AMUTE	I/O	System mute (L : Mute ON)
54	P40/A16	RY_B	I/O	Speaker B relay ON/OFF
55	P37/A15	RY_C/R	I/O	Rear/Center Speaker relay ON/OFF
56	P36/A14	RY_A	I/O	Speaker A relay ON/OFF
57	P35/A13	HP DET	I/O	HP detect, H : detected
58	P34/A12	RY-AC	I/O	AC relay ON/OFF
59	P33/A11	MVRATT	I/O	ATT control of master volume (less than -15dB : L)
60	P32/A10	LOW_CONSUMPTION	I/O	If stop mode, port L, else H
61	P31/A9	EVR CLK	I/O	Clock signal for Function and E-volume
62	Vcc	5V	5V	
63	P30/A8(/_/D7)	EVR DT	I/O	Data signal for Function and E-volume
64	Vss	GND	GND	
65	P27/A7(/D7/D6)	NC	I/O	
66	P26/A6(/D6/D5)	4053INH	I/O	Component terminal control
67	P25/A5(/D5/D4)	4053A	I/O	Component terminal control
68	P24/A4(/D4/D3)	furniture	I/O	Furniture control signal
69	P23/A3(/D3/D2)	SWDET	I/O	SWSP detect
70	P22/A2(/D2/D1)	VIDEO3	I/O	VIDEO input select
71	P21/A1(/D1/D0)	VIDEO2	I/O	VIDEO input select
72	P20/A0(/D0/_)	VIDEO1	I/O	NJM2296 control (VIDEO input select)
73	P17/D15/INT5	OL DET	I/O	Detect overload of AMP
74	P16/D14/INT4	NC	I/O	
75	P15/D13/INT3	RDS CLK	I/O	Fixed to "L".
76	P14/D12	DT	I/O	Fixed to "L".
77	P13/D11	FM+	I/O	Fixed to "L".
78	P12/D10	NC	I/O	
79	P11/D9	NC	I/O	
80	P10/D8	NC	I/O	
81	P07/D7	TUNER DO	I/O	Data input signal for tuner contorol
82	P06/D6	TUNER CLK	I/O	Clock signal for tuner contorol
83	P05/D5	TUNER DI	I/O	Data output signal for tuner contorol
84	P04/D4	TUNER CE	I/O	Chip select signal for tuner contorol
85	P03/D3	6 OHM	I/O	if stop mode, port L, else L/H depends on selection.
86	P02/D2	NC	I/O	
87	P01/D1	NC	I/O	
88	P00/D0	NC	I/O	
89	P107/AN7/KI3	NC	I/O	
90	P106/AN6/KI2	NC	I/O	
91	P105/AN5/KI1	NC	I/O	
92	P104/AN4/KI0	NC	I/O	
93	P103/AN3	NC	I/O	
94	P102/AN2	SIMUKE1	I/O	Input 1 to switch region
95	P101/AN1	SIMUKE2	I/O	Input 2 to switch region
96	AVSS	AVSS	GND	Connect to VSS
97	P100/AN0	NC	I/O	
98	VREF	VREF	5V	Connect to VCC
99	AVcc	AVCC	5V	Connect to VCC
100	P97/ADTRG/SIN4	NC	I/O	

■ PE5420A (FRONT DISPLAY ASSY : IC401)

• System Control MCU

■ Pin Arrangement (Top View)



• Pin Function

No.	Port	Pin Name	I/O	Pin Function
1	VDD1	+5V	-	positive power supply
2	VSS1	GND	-	ground potential
3	X1	Resonator	I	crystal connection for system clock oscillation
4	X2	Resonator	I	crystal connection for system clock oscillation
5	IC(VPP)	GND	-	
6	RESET	DISP RESET	I	receive reset signal from main u-com
7	P27/SCK1	DISP CK	I/O	clock signal from main u-com
8	P26/SI1	DISP DTI	I/O	datain from main u-com
9	P25/SO1	DISP DTO	I/O	data out to main u-com
10	P24/BUSY	DISP RDY	I/O	ready signal from main u-com
11	P23	NC	I/O	
12	P22	NC	I/O	
13	P21/SO3	NC	I/O	
14	P20/SCK3	NC	I/O	
15	P00/INTP0	DISP EN	I/O	enable signal from main u-com
16	P01/INTP1	NC	I/O	
17	P02/T1	SR IN	I/O	remote control signal input from main room
18	AVSS	GND	-	ground potential for A/D converter
19	ANI3	KEY IN4	I	
20	ANI2	KEY IN3	I	
21	ANI1	KEY IN2	I	
22	ANI0	KEY IN1	I	
23	VSS0	GND	-	ground potential for ports
24	AVDD	'+5V	-	analog power voltage input to A/D converter
25	VDD0	'+5V	-	positive power supply to ports
26	P64/FIP52	NC	I/O	
27	P63/FIP51	FEN A	I/O	MULTI JOG(Right)
28	P62/FIP50	FEN B	I/O	MULTI JOG(Left)
29	P61/FIP49	EN B	I/O	VOLUME JOG1(-)
30	P60/FIP48	EN A	I/O	VOLUME JOG1(+)
31	P57/FIP47	NC	I/O	
32	P56/FIP46	TEST	I/O	test mode input for checker
33	P55/FIP45	NC	I/O	
34	P54/FIP44	NC	I/O	
35	P53/FIP43	NC	I/O	
36	P52/FIP42	1W WUP	I/O	output wakeup signal to main u-com
37	P51/FIP41	VOL LED	I/O	LED Output
38	P50/FIP40	MCACC LED	I/O	LED Output
39	P47/FIP39	FUNC/AUX	O	LED Output
40	P46/FIP38	FUNC_TUNER	O	LED Output

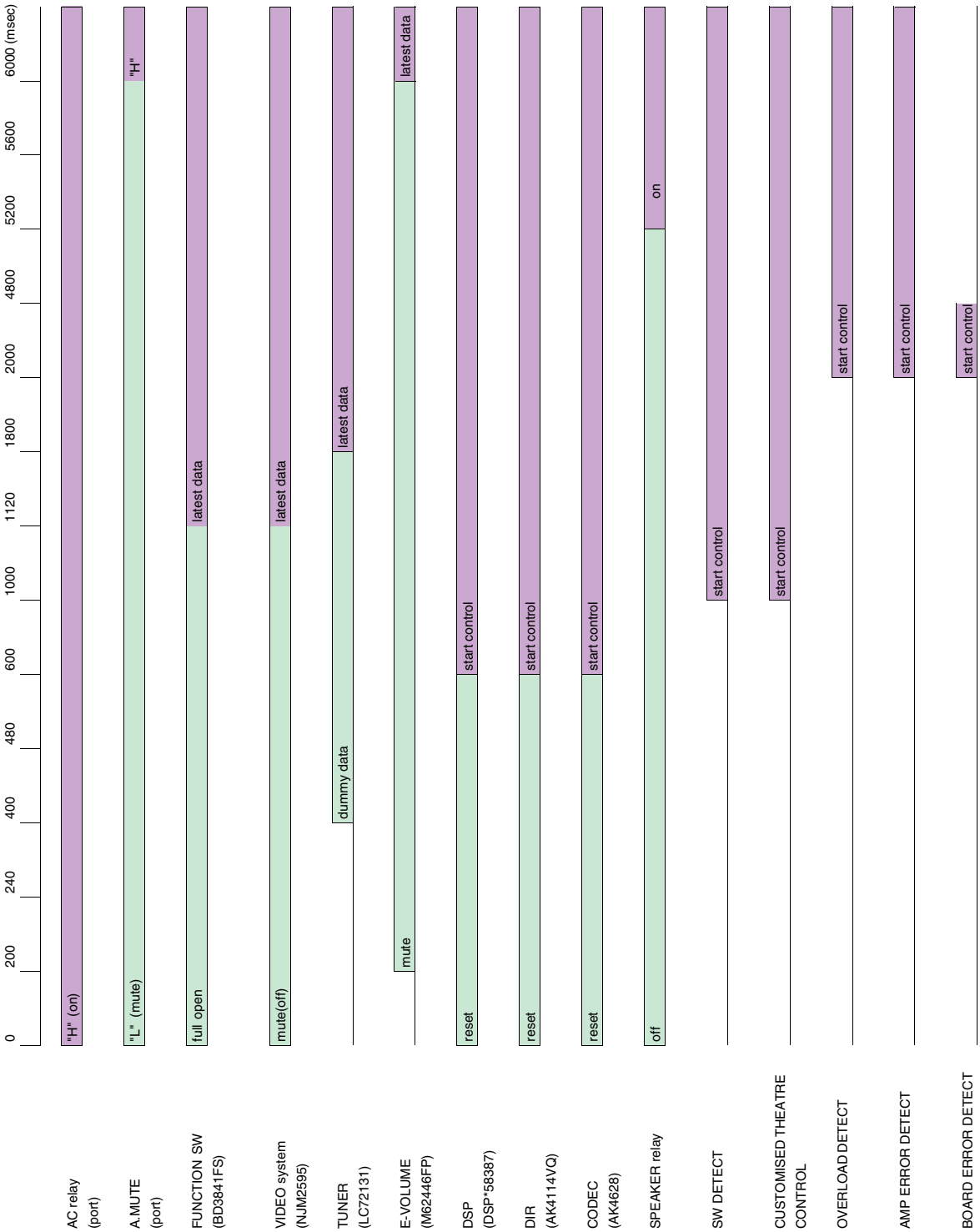
• Pin Function

No.	Port	Pin Name	I/O	Pin Function
41	FIP37/P45	FUNC_CDR	O	LED Output
42	FIP36/P44	FUNC_CD	O	LED Output
42	FIP35/P43	FUNC_DVD	O	LED Output
44	FIP34/P42	FUNC_TV	O	LED Output
45	FIP33/P41	FUNC_VCR	O	LED Output
46	FIP32/P40	FUNC_VIDEO	O	LED Output
47	FIP31/P37	S22	I/O	Display
48	FIP30/P36	S21	I/O	Display
49	FIP29/P35	S20	I/O	Display
50	FIP28/P34	S19	I/O	Display
51	FIP27/P33	S18	I/O	Display
52	FIP26/P32	S17	I/O	Display
53	FIP25/P31	S16	I/O	Display
54	FIP24/P30	S15	I/O	Display
55	FIP23	S14	O	Display
56	FIP22	S13	O	Display
57	FIP21	S12	O	Display
58	FIP20	S11	O	Display
59	VDD2	'+5V	-	positive power supply to FIP controller.
60	VLOAD	VF	-	pull down resistor connection of FIP controller
61	FIP19	S10	O	Display
62	FIP18	S9	O	Display
63	FIP17	S8	O	Display
64	FIP16	S7	O	Display
65	FIP15	S6	O	Display
66	FIP14	S5	O	Display
67	FIP13	S4	O	Display
68	FIP12	S3	O	Display
69	FIP11	S2	O	Display
70	FIP10	S1	O	Display
71	FIP9	G10	O	Display
72	FIP8	G9	O	Display
73	FIP7	G8	O	Display
74	FIP6	G7	O	Display
75	FIP5	G6	O	Display
76	FIP4	G5	O	Display
77	FIP3	G4	O	Display
78	FIP2	G3	O	Display
79	FIP1	G2	O	Display
80	FIP0	G1	O	Display

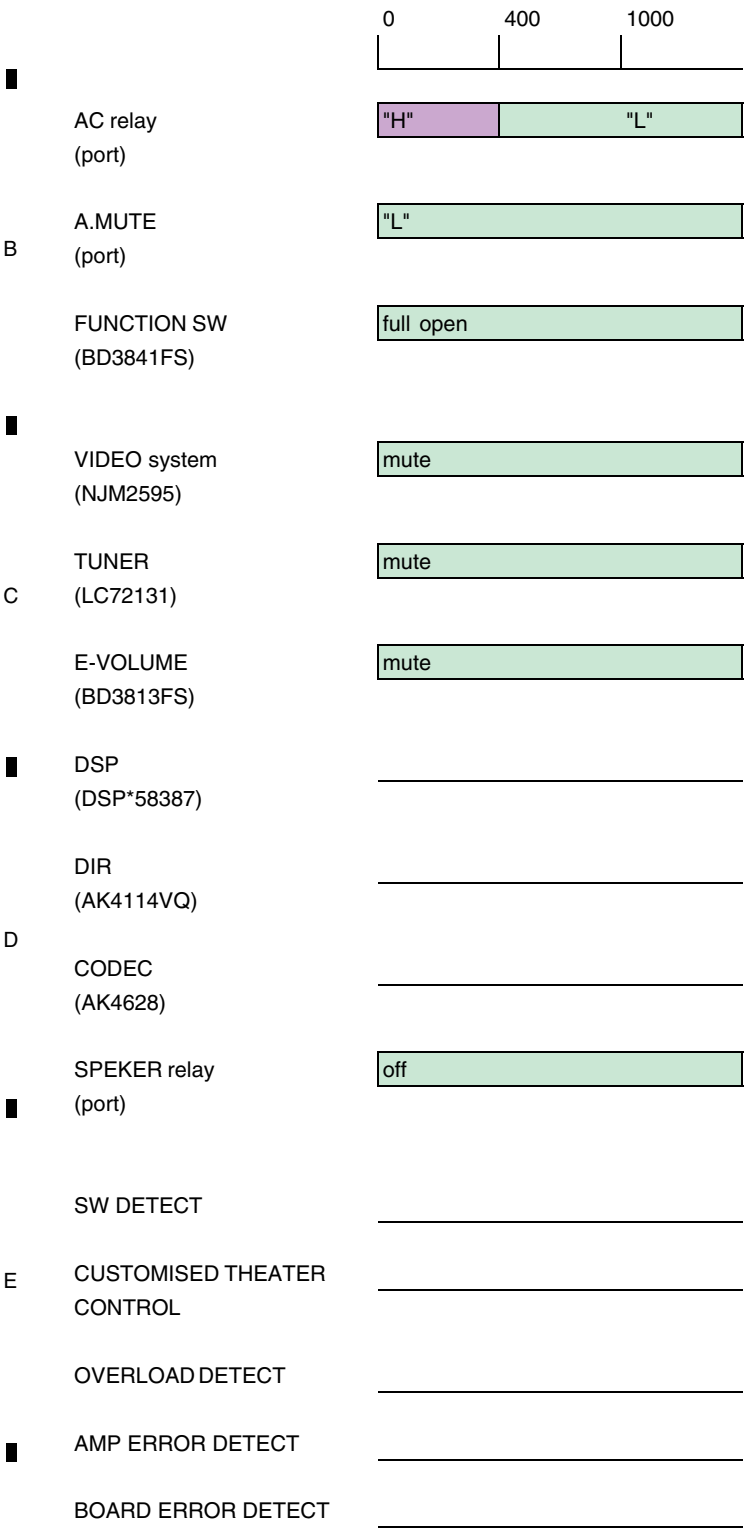
7.3 EXPLANATION

7.3.1 POWER ON AND OFF INITIAL TIMING CHART

■ POWER ON INITIAL TIMING CHART



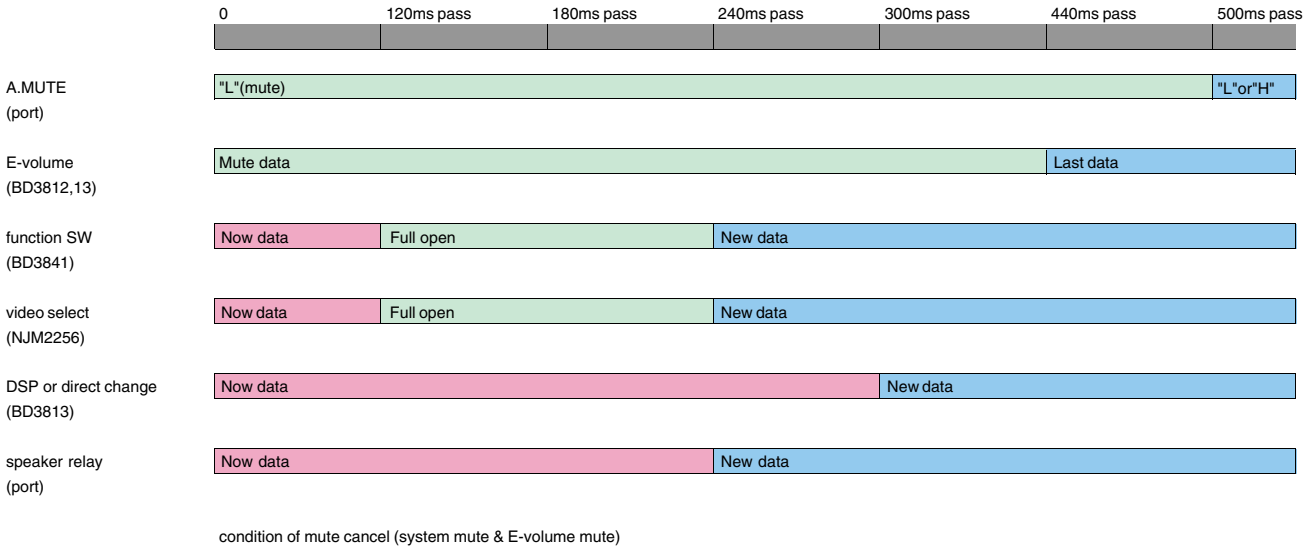
■ POWER OFF INITIAL TIMING CHART



7.3.2 IC DATA TRANSMISSION TIMING CHART

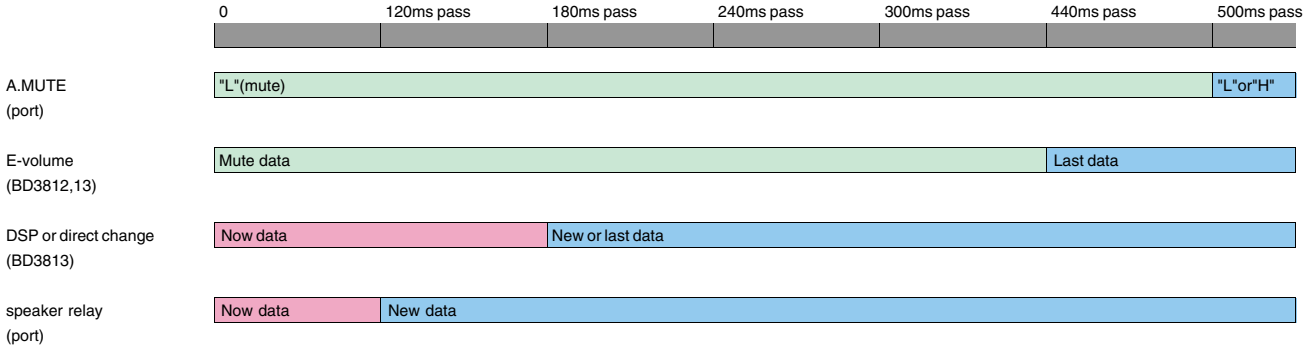
■ IC data transmission timing chart

1.When function chage



condition of mute cancel (system mute & E-volume mute)
1) when tuner mute during Tuner function
2) when communicate to DSP
3) when initial processing
4) when detect trouble of AMP DC
5) when detect overload of AMP
6) when Power off
7) when muting by key input

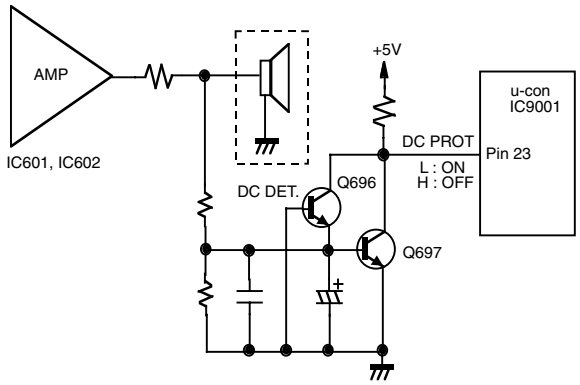
2.When except function chage



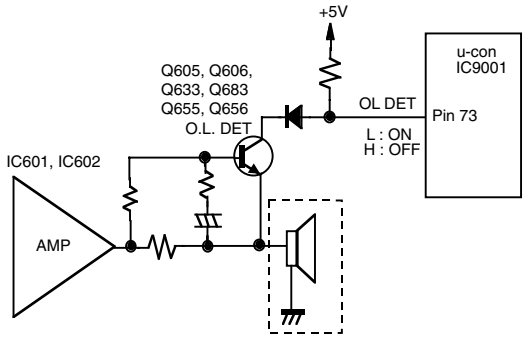
condition of mute cancel (system mute & E-volume mute)
1) when tuner mute during Tuner function
2) when communicate to DSP
3) when initial processing
4) when detect trouble of AMP DC
5) when detect overload of AMP
6) when Power off
7) when muting by key input

7.3.3 DETECTION CIRCUIT

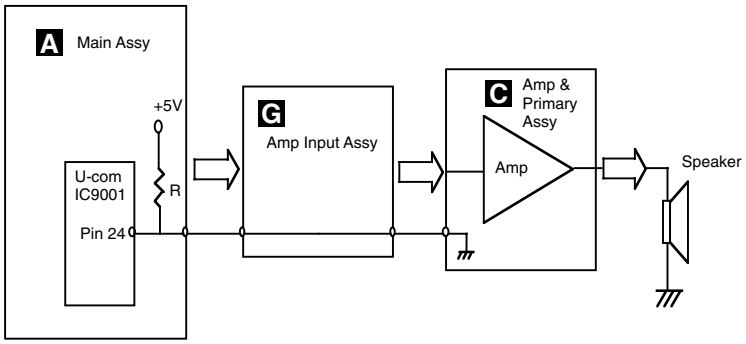
1.DC Detection Circuit Diagram:



2. Overload Detection Circuit Diagram:



3. PCB Board Protection Circuit Diagram



7.3.4 AMPLIFIER SYSTEM PROTECTION OPERATION SPECIFICATION

1. DC-abnormality detection

DC detection is only enabled 2 seconds after power-on.
If there is a fault in the power amplifier or a high-level signal lower than 5 Hz is input, the DC_DET port becomes "L".
If the "L" is detected, the microprocessor will perform as following flow chart.

In the case of simultaneous detection with the overload protection circuit, DC-abnormality detection is performed preferentially to overload detection.

When a DC abnormality is detected, A.MUTE* is turned on, speaker relay is turned off, then "AMP_ERR" flashes on the display.

*A.MUTE : Audio mute command

↓

The abnormality continues for 3 seconds.

↓ Continues.

The power is shut off.

↓

The power key is disabled.

↓ Recovery

The program restarts.

But be switched on with the following methods.
① TESTMODE ON (A55F+A55F)
② When power off, push FRONT ENTER key + ADVANCED SURROUND key continuously 2sec.
(②: When a DC abnormality is detected and the power is shut off.)

2. Overload detection

If the speaker terminals are short-circuited or low-load driving is detected, the OL_DET port becomes "L".
If the "L" is detected, the microprocessor will perform as following flow chart.

When an overload is detected, A.MUTE* is turned on, speaker relay is turned off, then "OVERLOAD" flashes on the display.

↓

The abnormality continues for 3 seconds.

↓ Continues.

The power is shut off.

↓ Recovery

The power is shut off even if the unit recovers.

3. Board detection

If the board connection from MAIN ASSY to AM & PRIMARY ASSY is interrupted, the BOARD_DET port becomes “H”.
If the “H” is detected, the microprocessor will perform as following flow chart.

In the case of simultaneous detection with the overload protection circuit, Board detection is performed preferentially to DC-abnormality detection and Overload detection.

When an boad error is detected, A.MUTE* is turned on, speaker relay is turned off, then "BOAD ERR" flashes on the display.

↓

The abnormality continues for 3 seconds.

↓ Continues.

The power is shut off.

↓ Recovery

The power is shut off even if the unit recovers.

7.3.5 AMPLIFIER FAILURE DIAGNOSIS FLOW CHART

■ Amplifier failure diagnosis flow chart

When DC detection is activated ("AMP_ERR" flashes on the display), failure (damage) of the power amplifier section is considered.

Caution:
When release the lock state of power key before repair, please be careful because there is the possibility that more damages will occur when turns on the power once again!

• According to a symptom, perform the following confirmation beforehand.

1) Is the operation of fan motor in normal condition?

2) Are there any Fuses and IC protectors open?

3) After turn on the power, confirm that the supply voltage of the point that can be measured is appropriate.

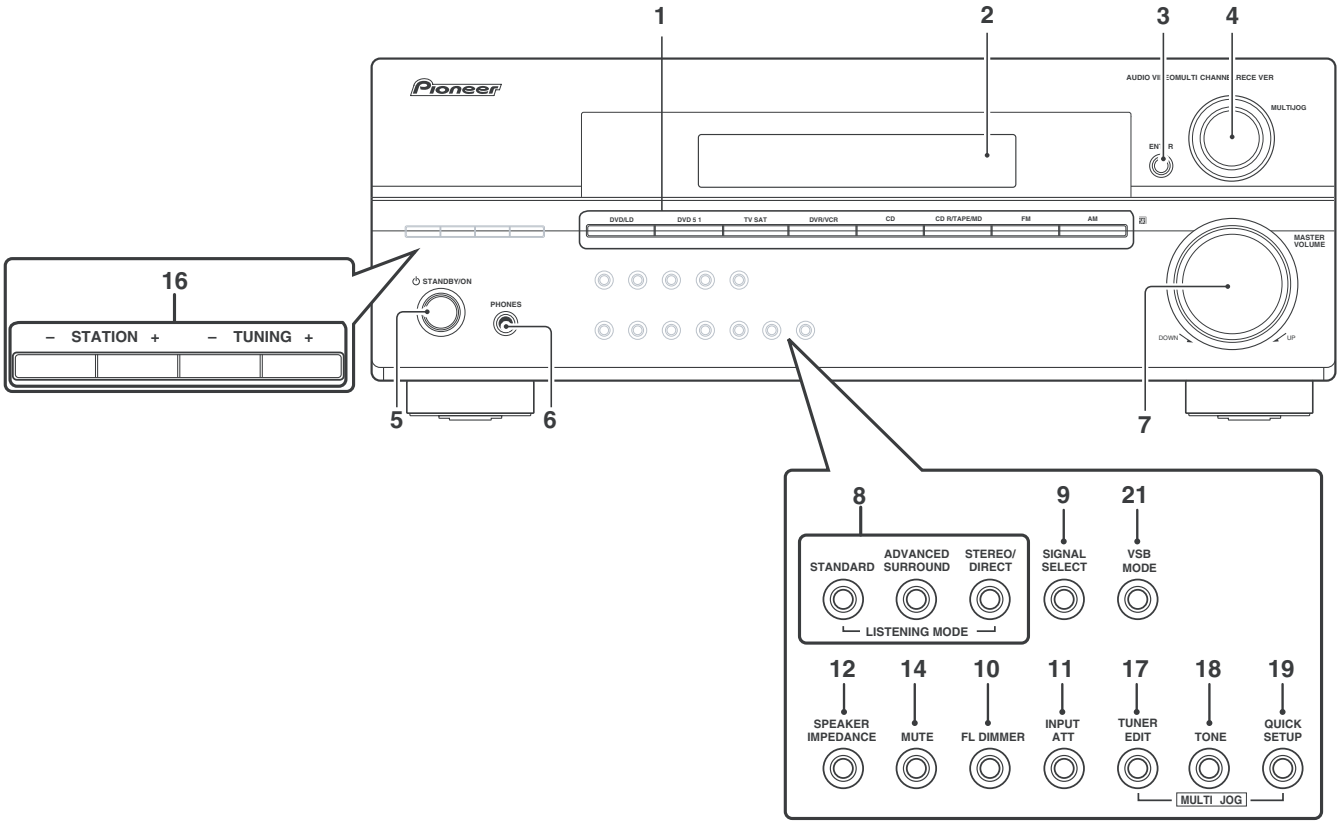
4) Whether the voltage of pin3 of IC601 or IC602 is equal to (VL-0.7V). If not (eg, equal to VH), then change the corresponding power pack IC601 or IC602.

5) Furthermore, check the output DC voltage of each channel of power pack IC601 and IC602 to limit the failure channel and identify the defect power pack.

• After identify the failure channel, check that each part is not damaged (resistor, diode... etc. value / open / short)

8. PANEL FACILITIES

Front panel



1 Input select buttons
Press to select an input source.

2 Character display
See Display.

3 ENTER

4 MULTI JOG dial
The **MULTI JOG** dial performs a number of tasks. Use it to select options after pressing the designated **MULTI JOG** buttons.

5 ⏻ STANDBY/ON
Switches the receiver between on and standby.

6 PHONES jack
Use to connect headphones. When the headphones are connected, there is no sound output from the speakers.

7 MASTER VOLUME

8 LISTENING MODE buttons

STANDARD
Press for Standard decoding and to switch between the various Pro Logic II and Neo:6 options.

ADVANCED SURROUND
Use to switch between the various surround modes.

STEREO/DIRECT (AUTO SURR)
Switches between direct and stereo playback. Direct playback bypasses the tone controls and channel levels for the most accurate reproduction of a source.

9 SIGNAL SELECT
Use to select an input signal.

10 FL DIMMER
Dims or brightens the display.

11 INPUT ATT
Attenuates (lowers) the level of an analog input signal to prevent distortion.

12 SPEAKER IMPEDANCE
Use to change the impedance setting

13 • • • • • •

14 MUTE
Mutes the sound (or restores the sound if it has been muted).

15 • • • • • •

16 TUNING / STATION buttons
Selects the frequency and station presets when using the tuner.

17 TUNER EDIT
Press to memorize and name a station for recall.

18 TONE
Press this button to access the bass and treble controls, which you can then adjust with the **MULTI JOG** dial.

19 QUICK SETUP
See Using the Quick Setup.

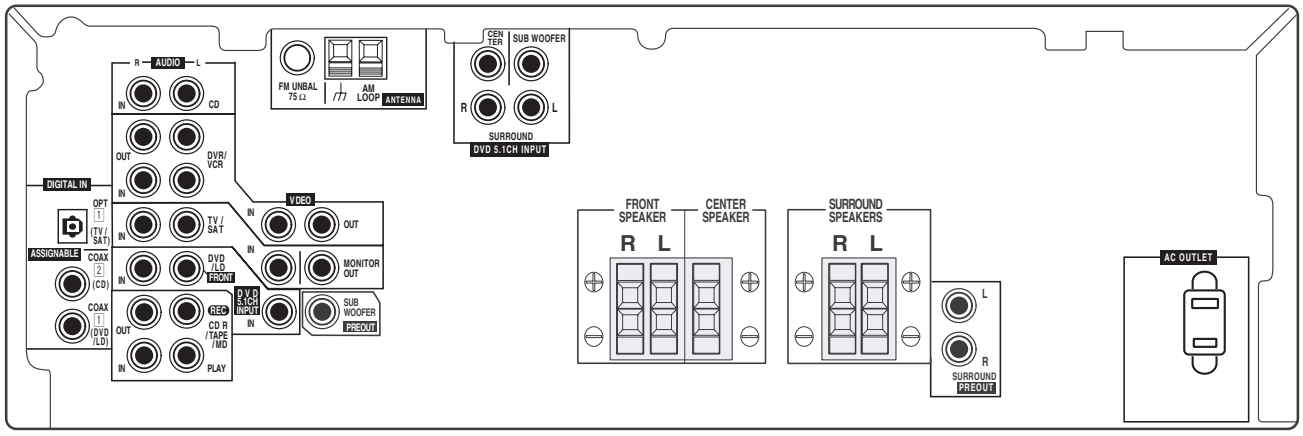
20 • • • • • •

21 VSB MODE

Selects the Virtual Surround Back (VSB) mode.

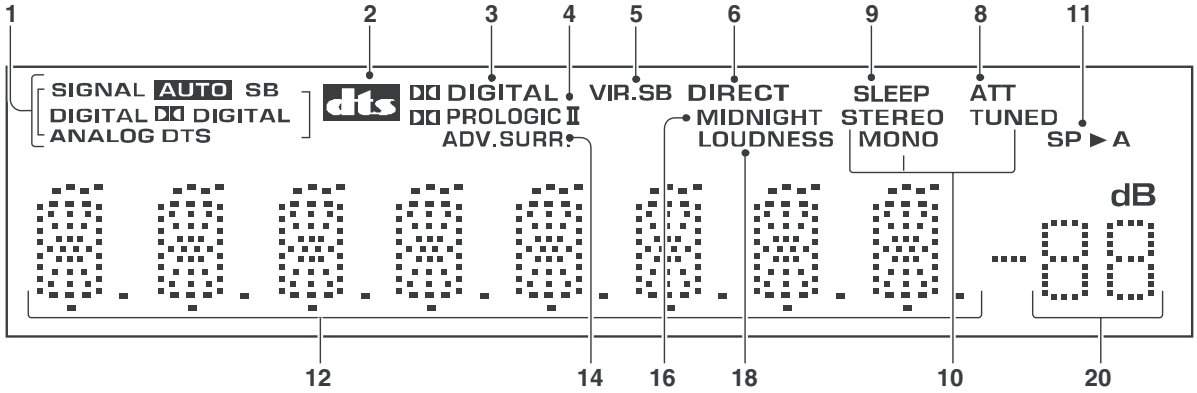
Rear panel

VSX-415



Display

VSX-415 model:



1 SIGNAL SELECT indicators

Lights to indicate the type of input signal assigned for the current component:

AUTO

Lights when **AUTO** signal select is on.

SB

Depending on the source, this lights when a signal with surround back channel encoding is detected.

DIGITAL

Lights when a digital audio signal is detected.

DIGITAL

Lights when a Dolby Digital encoded signal is detected.

ANALOG

Lights when an analog signal is detected.

DTS

Lights when a source with DTS encoded audio signals is detected.

2

When the **STANDARD** mode of the receiver is on, this lights to indicate decoding of a DTS multichannel signal.

3 DIGITAL

When the **STANDARD** mode of the receiver is on, this lights to indicate decoding of a Dolby Digital multichannel signal.

4 PRO LOGIC II x

When the (**STANDARD**) Pro Logic II mode of the receiver is on, **PRO LOGIC II** lights to indicate Pro Logic II decoding.

5 VIR.SB

Lights during Virtual surround back processing.

6 DIRECT

Lights when source direct playback is in use. Direct playback bypasses the tone controls and channel levels for the most accurate reproduction of a source.

7 • • • • • •

8 ATT

Lights when **INPUT ATT** is used to attenuate (reduce) the level of the analog input signal.

9 SLEEP

Lights when the receiver is in sleep mode.

10 Tuner indicators

/ MONO

Lights when the mono mode is set using the **MPX** button.

/ STEREO

Lights when a stereo FM broadcast is being received in auto stereo mode.

/ TUNED

Lights when a broadcast is being received.

11 Speaker indicator

Shows if the speaker system is on or not. **SP►A** means the speakers are switched on. **SP►** means the headphones are connected.

12 Character display

13 • • • • • •

14 ADV.SURR. (Advanced Surround)

Lights when one of the Advanced Surround modes has been selected.

15 • • • • • •

16 MIDNIGHT

Lights during Midnight listening.

17 • • • • • •

18 LOUDNESS

Lights during Loudness listening.

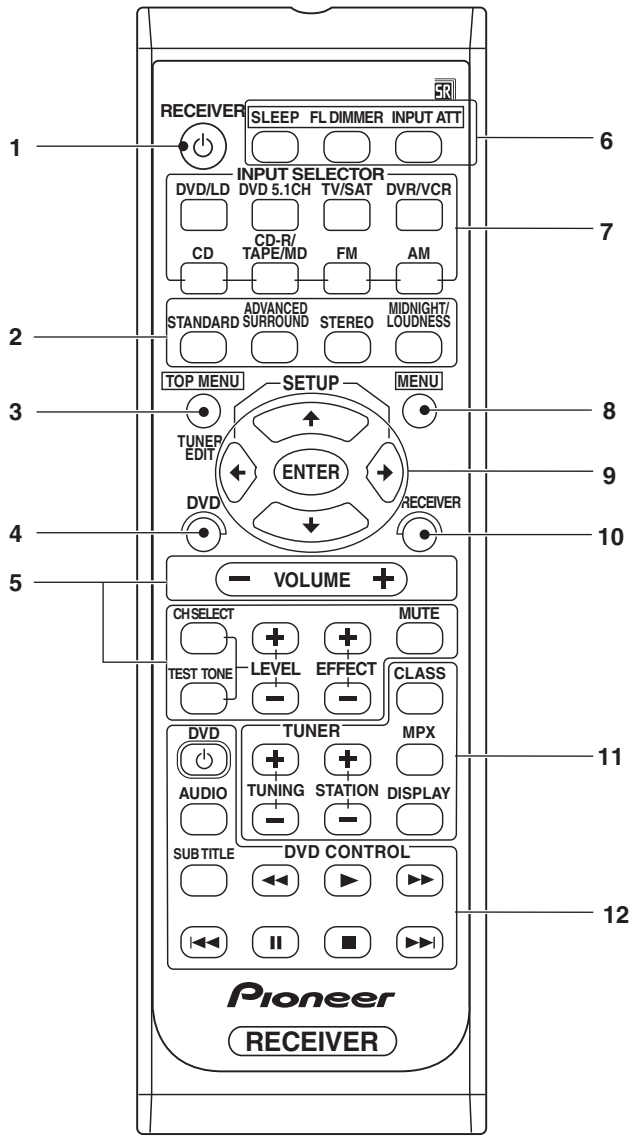
19 • • • • • •

20 Master volume level

Shows the overall volume level. **---dB** indicates the minimum level, and **- 0 dB** indicates the maximum level.

Depending on your level settings for each channel, the maximum volume can range between –10 dB and –0 dB.

Remote control



1 RECEIVER⏻
Switches the receiver between standby and on.

2 Listening mode buttons

STANDARD
Press for Standard decoding and to switch between the various Pro Logic II and Neo:6 options.

ADVANCED SURROUND
Use to switch between the various surround modes.

STEREO
Switches between direct and stereo playback. Direct playback bypasses the tone controls and channel levels for the most accurate reproduction of a source.

MIDNIGHT/LOUDNESS
Switches to Midnight or Loudness listening.

3 TOP MENU
Displays the disc 'top' menu of a DVD.

TUNER EDIT
Press to memorize and name a station for recall.

4 DVD
Press to use the DVD controls on the remote.

5 RECEIVER CONTROL buttons

VOLUME +/–
Use to set the listening volume.

MUTE
Mutes/unmutes the sound.

CH SELECT
Selects a speaker when setting up the surround sound of the receiver.

TEST TONE
Sounds the test tone when setting up the surround sound of the receiver.

LEVEL +/–
Adjusts the channel levels.

EFFECT +/–
Adds or subtracts the amount of effect with the advanced surround modes.

6 SLEEP
Use to set the sleep timer.

FL DIMMER
Dims or brightens the display.

INPUT ATT
Attenuates (lowers) the level of an analog input signal to prevent distortion.

7 INPUT SELECTOR buttons
Press to select an input source.

8 MENU
Displays the disc menu of DVD-Video discs. It also displays TV menus.

9 ↑↓←→/ENTER
Use the arrow buttons when setting up your surround sound system.
Also used for DVD menus.

10 RECEIVER
Use to switch to the receiver controls on the remote control. Also used when setting up the surround sound for the receiver.

11 TUNER controls
The **TUNING +/–** buttons can be used to find radio frequencies and the **STATION +/–** buttons can be used to select preset radio stations.

CLASS
Switches between the three banks (classes) of station presets.

MPX
Use to switch between auto stereo and mono reception of FM broadcasts. If the signal is weak then switching to mono will improve the sound quality.

DISPLAY
Switch the display between station preset name and frequency.

12 DVD CONTROL buttons
You can use these buttons to control a Pioneer DVD player connected to your system.

Button	What it does
DVD⏻	Turns DVD power on/off.
AUDIO	Changes the audio language or channel.
SUBTITLE	Displays/changes the subtitles on multilingual DVD-Video discs.
►	Starts/resumes normal playback.
❚❚	Pauses/unpauses a disc.
■	Stops playback.
◄◄	Press to start fast reverse scanning.
►►	Press to start fast forward scanning.
I◄◄	Skips to the start of the current track or chapter, then previous tracks/chapters.
►►I	Skips to the next track or chapter.