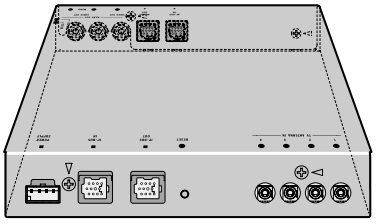
Pioneer sound.vision.soul

Service Manual



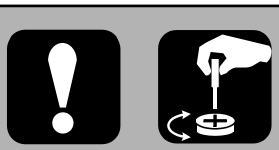
GEX-P6400TV/UC

ORDER NO.
CRT2856

HIDE-AWAY TV TUNER
GEX-P6400TV$_{UC}$
HIDE-AWAY TV TUNER
GEX-P6400TVP$_{EW}$
HIDE-AWAY TV TUNER
GEX-P6450TV$_{ES}$
HIDE-AWAY TV TUNER
GEX-P6450TVP$_{ES}$

For your inspection, the following extention cords are supplied. Use them if necessary.

Part to use	Part No.
Signal Generator <-> GGP1031(CDE6830)	GGP1032(CDE7037)
GGP1032(CDE7037) <-> AV-BUS IN Terminal	GGP1031(CDE6830)



For details, refer to "Important symbols for good services".

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

K-ZZA.APR.2002.printed in Japan

SAFETY INFORMATION

UC

A

CAUTION

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

B

EW

CAUTION

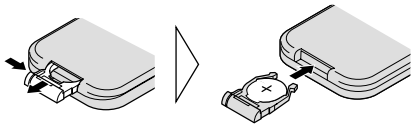
Danger of explosion if battery is incorrectly replaced.
Replaced only with the same or equivalent type recommended by the manufacture.
Discord used batteries according to the manufacture's instructions.

ES

Battery

C

Slide the tray out on the back of the remote controller and insert the battery with the (+) and (–) poles pointing in the proper direction.



Note :

- Use a CR2025 (3V) lithium battery only. Never use other types of battery with this unit.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replaced only with the same or equivalent type.

D

[Important symbols for good services]
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

CONTENTS

A

B

C

D

1. SPECIFICATIONS

● GEX-P6400TV/UC

General

Power source ..... 14.4 V DC (10.8 — 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 0.5 A
Dimensions ..... 172 (W) × 30 (H) × 148 (D) mm
[6-3/4 (W) × 1-1/8(H) × 5-7/8 (D) in.]
Weight ..... 0.7 kg (1.5 lbs)
Backup current ..... 0.54 mA

TV tuner

Reception channel/TV system ..... US/M : VHF 2 — 13 ch, UHF 14 — 69 ch
Color system ..... NTSC compatible
Usable sensitivity ..... 12 dBμ
Video S/N ..... Over 37 dB (59 dBμ RF input, White Peak 100%)
Video S/N 30 dB usable sensitivity ..... 44 dBμ
Antenna input ..... 4 ch Diversity (ϕ 3.5 mm Mini plug type)
Antenna cable ..... 6 m (19 ft 8 in)

Rear display output

Video ..... 1 Vp-p/75 Ω (TV: White 100% Modulated)
Sound ..... 500 mVrms/Less than 1 kΩ (TV: 100% Modulated)

● GEX-P6400TVP/EW

General

Power source ..... 14.4 V DC (10.8 — 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 0.5 A
Dimensions ..... 172 (W) × 30 (H) × 148 (D) mm
Weight ..... 0.7 kg
Backup current ..... 0.54 mA

TV tuner

Reception channel/TV system ..... COUNTRY 1: (CCIR/B, G, H) : VHF 2 — 12 ch, UHF 21 — 69 ch
(For each Country Group) COUNTRY 2: (ITALY/B, G, H) : VHF A — H2 ch, UHF 21 — 69 ch
COUNTRY 3: (UK, IRELAND/I) : VHF A — Kch, UHF 21 — 69 ch
COUNTRY 4: (OIRT/D, K) : VHF R1 — R12 ch, UHF 21 — 69 ch
Color system ..... PAL compatible
Usable sensitivity ..... 18 dBμ
Video S/N ..... Over 37 dB (59 dBμ RF input, White Peak 100%)
Video S/N 30 dB usable sensitivity ..... 45 dBμ
Antenna input ..... 4 ch Diversity (ϕ 3.5 mm Mini plug type)

Rear display output

Video ..... 1 Vp-p/75 Ω (TV: White 100% Modulated)
Sound ..... 500 mVrms/Less than 1 kΩ (TV: 100% Modulated)

● GEX-P6450TV/ES

General

Power source ..... 14.4 V DC (10.8 — 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 0.5 A
Dimensions ..... 172 (W) × 30 (H) × 148 (D) mm
Weight ..... 0.7 kg
Backup current ..... 0.54 mA

TV tuner

Reception channel/TV system ..... US/M: VHF 2 — 13 ch, UHF 14 — 69 ch
Color system ..... NTSC compatible
Usable sensitivity ..... 12 dBμ
Video S/N ..... Over 37 dB (59 dBμ RF input, White Peak 100 %)
Video S/N 30 dB usable sensitivity ..... 44 dBμ
Antenna input ..... 4 ch Diversity (ϕ 3.5 mm Mini plug type)
Antenna cable ..... 6 m

Rear display output

Video ..... 1 Vp-p/75 Ω (TV: White 100 % Modulated)
Sound ..... 500 mVrms/Less than 1 kΩ (TV: 100 % Modulated)

● GEX-P6450TVP/ES

General

Power source ..... 14.4 V DC (10.8 — 15.1 V allowable)
Grounding system ..... Negative type
Max. current consumption ..... 0.5 A
Dimensions ..... 172 (W) × 30 (H) × 148 (D) mm
Weight ..... 0.7 kg
Backup current ..... 0.54 mA

TV tuner

Reception channel/TV system ..... COUNTRY 1: (CCIR/B, G, H) : VHF 2 — 12 ch, UHF 21 — 69 ch
(For each Country Group) COUNTRY 2: (INDONESIA/B, G, H) : VHF 1A — 11 ch, UHF 21 — 69 ch
COUNTRY 3: (CHINA/D, K) : VHF 1 — 12 ch, UHF 13 — 57 ch
COUNTRY 4: (UK, IRELAND/I) : VHF A — K ch, UHF 21 — 69 ch
COUNTRY 5: (OIRT/D, K) : VHF R1 — R12 ch, UHF 21 — 69 ch
COUNTRY 6: (AUSTRALIA/B, G, H) : VHF 0 — 11 ch, UHF 28 — 69 ch
Color system ..... PAL compatible
Usable sensitivity ..... 18 dBμ
Video S/N ..... Over 37 dB (59 dBμ RF input, White Peak 100%)
Video S/N 30 dB usable sensitivity ..... 45 dBμ
Antenna input ..... 4 ch Diversity (ϕ 3.5 mm Mini plug type)
Antenna cable ..... 6 m

Rear display output

Video ..... 1 Vp-p/75 Ω (TV: White 100% Modulated)
Sound ..... 500 mVrms/Less than 1 kΩ (TV: 100% Modulated)

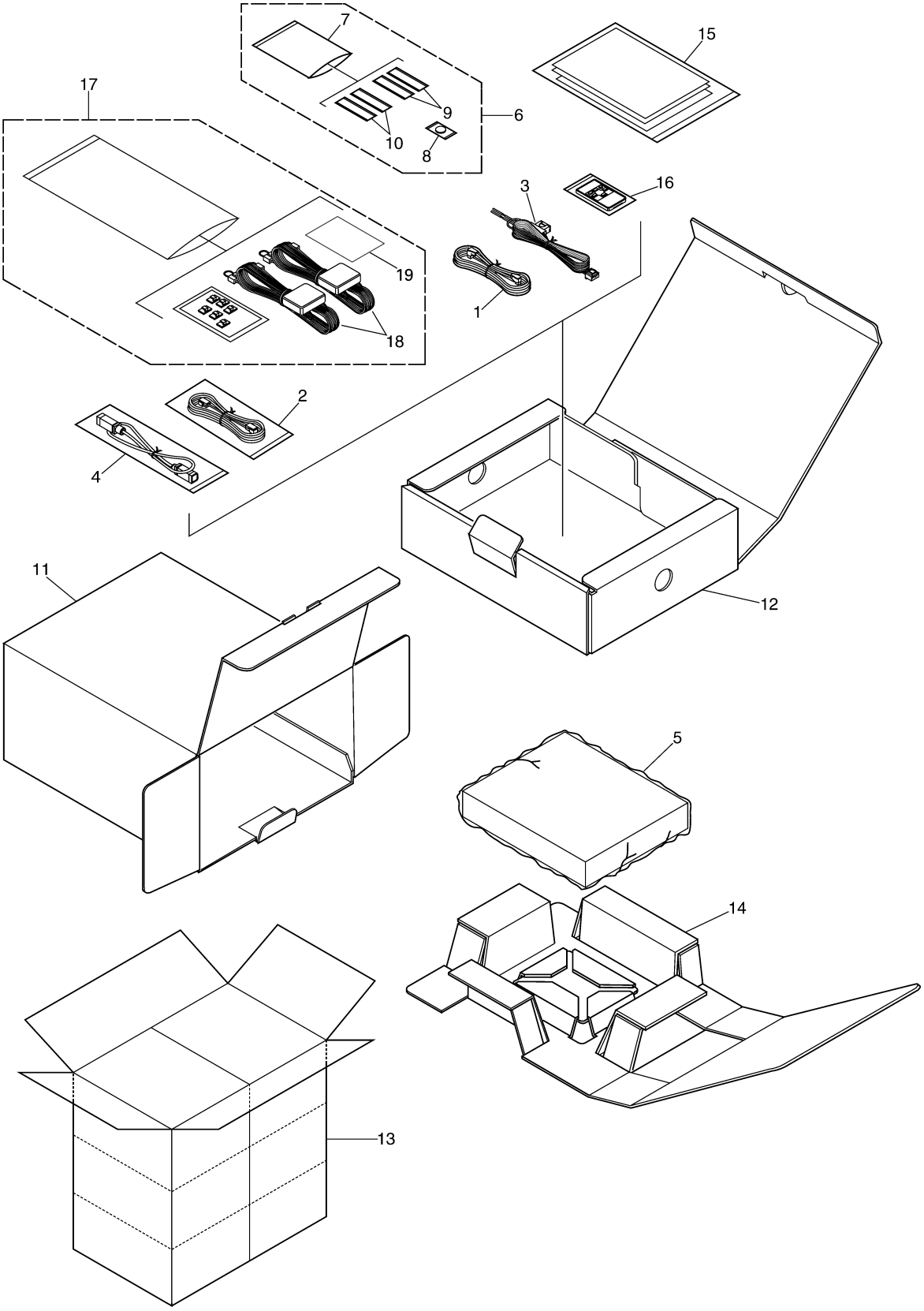
Infrared Remote Control

Wavelength ..... 940 nm ±50nm
Output ..... typ; 12 mw/sr per Infrared LED

2. EXPLODED VIEWS AND PARTS LIST

*NOTES : • Parts marked by " * " are generally unavailable because they are not in our Master Spare Parts List.*
• Screw adjacent to ▽ mark on the product are used for disassembly.
• For the applying amount of lobricants or glue, follow the instructions in this manual.
(In the case of no amount instructions,apply as you think it appropriate.)

2.1 PACKING



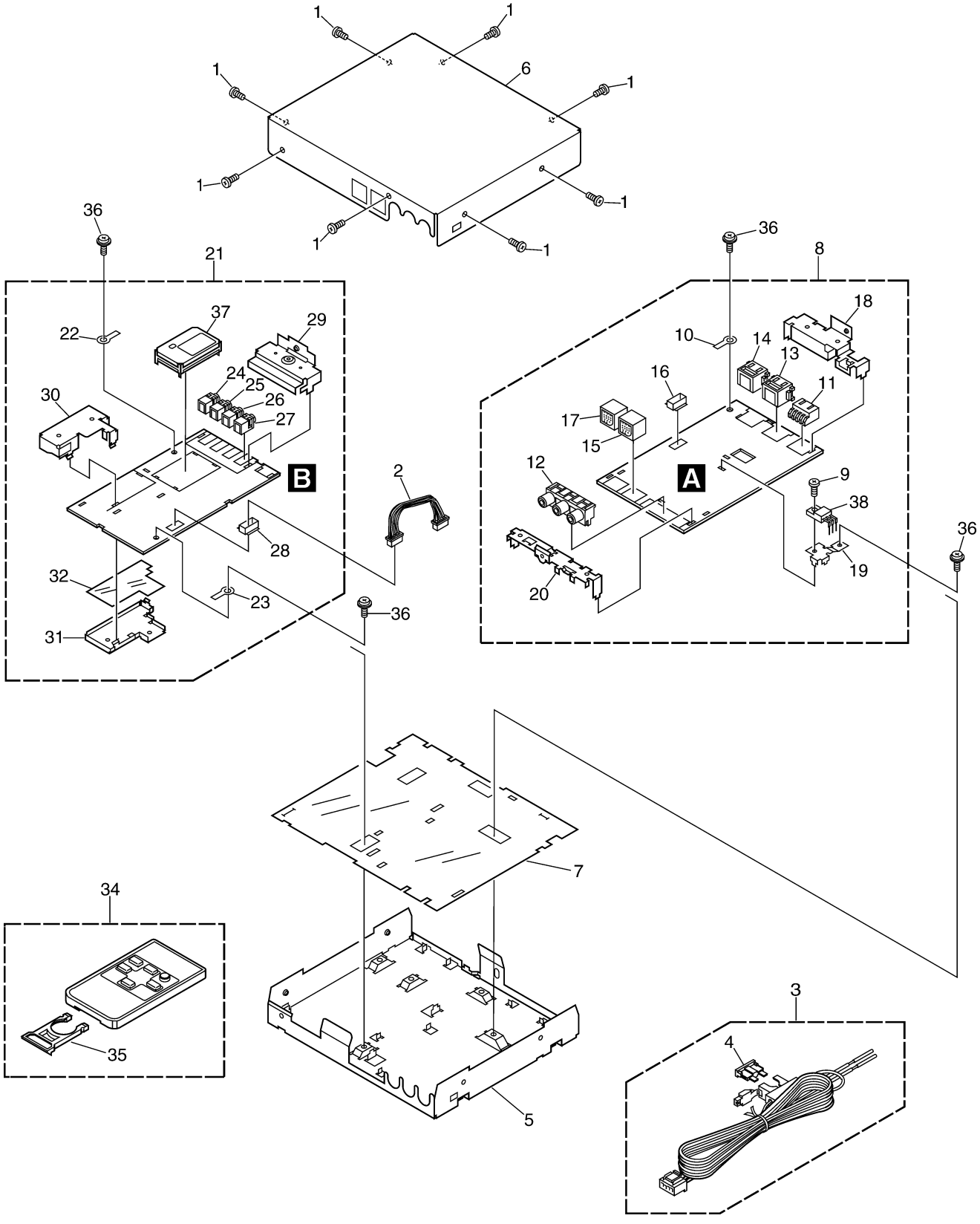
PACKING SECTION PARTS LIST

Mark	NO	Symbol and Description	GEX-P6400TV/UC	GEX-P6400TVP/ EW	GEX-P6450TV/ES	GEX-P6450TVP/ ES
	1	Cord Assy	CDE5880	CDE5880	CDE5880	CDE5880
	2	Cord Assy	CDE6830	CDE6830	CDE6830	CDE6830
	3	Cord Assy	CDE6844	CDE6844	CDE6844	CDE6844
	4	Cord Assy	CDE7018	CDE7018	CDE7018	CDE7018
	5	Cover	CEG1098	CEG1098	CEG1098	CEG1098
	6	Accessory Assy	Not used	CEA3296	CEA3296	CEA3296
*	7	Polyethylene Bag	Not used	CEG1101	CEG1101	CEG1101
*	8	Battery	Not used	CEX1065	CEX1065	CEX1065
	9	Fastener (Rough)	Not used	CNM3728	CNM3728	CNM3728
	10	Fastener (Soft)	Not used	CNM3729	CNM3729	CNM3729
	11	Carton	CHG4708	CHG4709	CHG4710	CHG4711
	12	Sub Carton	CHG4712	CHG4712	CHG4712	CHG4712
	13	Contain Box	CHL4708	CHL4709	CHL4710	CHL4711
	14	Protector	CHP2554	CHP2554	CHP2554	CHP2554
	15-1	Owner's Manual	CRD3615	CRD3612	CRD3620	CRD3617
*	15-2	Card	ARY1048	Not used	Not used	Not used
	15-3	Installation Manual	CRD3616	CRD3614	CRD3619	CRD3619
*	15-4	Warranty Card	Not used	CRY1157	Not used	Not used
	15-5	Polyethylene Bag	CEG1116	CEG1116	CEG1116	CEG1116
	15-6	Fastener (Rough)	CNM3728	Not used	Not used	Not used
	15-7	Fastener (Soft)	CNM3729	Not used	Not used	Not used
*	15-8	Caution Card	Not used	CRP1280	Not used	Not used
*	15-9	Caution Card	CRP1282	Not used	Not used	Not used
	16	Remote Control Assy	Not used	CXB8951	CXB8951	CXB8951
	17	DC TV Antenna Assy	CXB9183	Not used	CXB9183	CXB9183
	18	Antenna Unit	CZX5019	Not used	CZX5019	CZX5019
*	19	Caution Card	CZR3093	Not used	CZR3093	CZR3093

Owner's Manual,Installation Manual

Part No.	Language
CRD3615	English, French
CRD3616	English, French
CRD3612	English, Spanish, German, French, Italian, Dutch
CRD3614	English, Spanish, German, French, Italian, Dutch
CRD3620	English, Spanish, Casual Chinese, Korean
CRD3619	English, Spanish, Portuguese(B), Casual Chinese, Arabic, Korean
CRD3617	English, Spanish, Portuguese(B), Casual Chinese, Arabic

2.2 EXTERIOR


1
6
36
21
22
37
29
24
25
26
27
30
B
28
32
23
31
2
36
8
18
10
14
13
16
11
17
15
12
A
9
38
19
20
36
7
34
35
3
4
5

(1) EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BSZ30P060FZK
	2	Cord Assy	CDE6843
	3	Cord Assy	CDE6844
	4	Fuse(4A)	CEK1001
	5	Chassis	CNA2492
	6	Case	See Contrast table(2)
	7	Insulator	CNM7681
	8	Mother Unit	See Contrast table(2)
	9	Screw	BMZ30P050FMC
	10	Terminal(CN1368)	CKF1064
	11	Plug(CN1366)	CKM1131
	12	Pin Jack(CN1365)	CKS2918
	13	Connector(CN1361)	CKS3407
	14	Connector(CN1360)	CKS3408
	15	Connector(CN1363)	CKS4362
	16	Connector(CN1367)	CKS4587
	17	Connector(CN1362)	CKS4590
	18	Holder	CNC9887
	19	Holder	CNC9888
	20	Holder	CNC9889
	21	TV Tuner Unit	See Contrast table(2)
	22	Terminal(CN2201)	CKF1064
	23	Terminal(CN2601)	CKF1064
	24	Jack(CN2150)	CKN1032
	25	Jack(CN2151)	CKN1032
	26	Jack(CN2152)	CKN1032
	27	Jack(CN2153)	CKN1032
	28	Connector(CN2701)	CKS4587
	29	Holder	CNC9253
	30	Shield	CNC9885
	31	Shield	CNC9886
	32	Insulator	CNM7680
	33	•••••	
	34	Remote Control Assy	See Contrast table(2)
	35	Cover	See Contrast table(2)
	36	Screw	ISS26P055FUC
	37	Front End(FE2201)	See Contrast table(2)
	38	Transistor(Q1857)	2SD2375

(2) CONTRAST TABLE

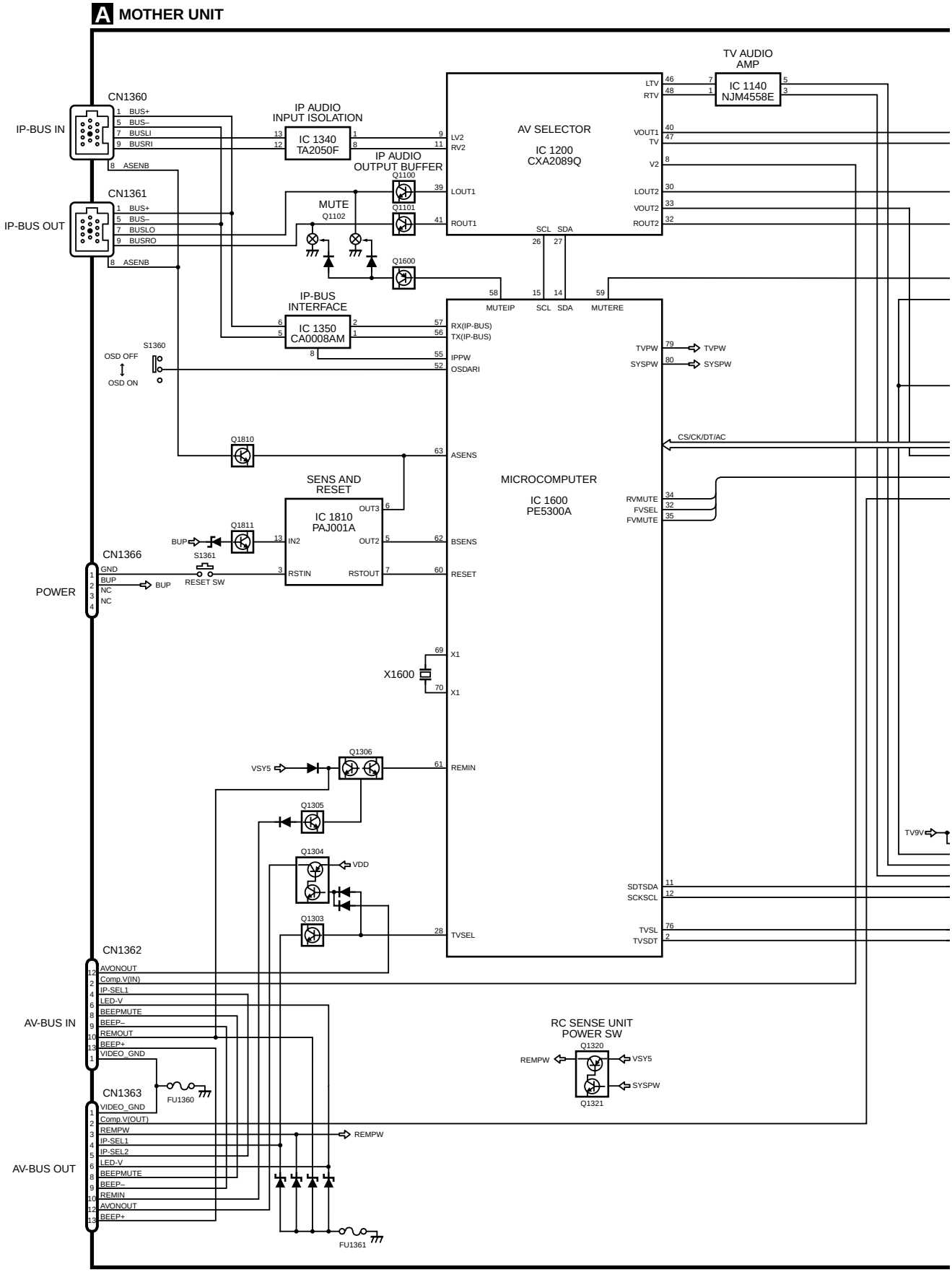
GEX-P6400TV/UC, GEX-P6400TVP/EW, GEX-P6450TV/ES and GEX-P6450TVP/ES are constructed the same except for the following:

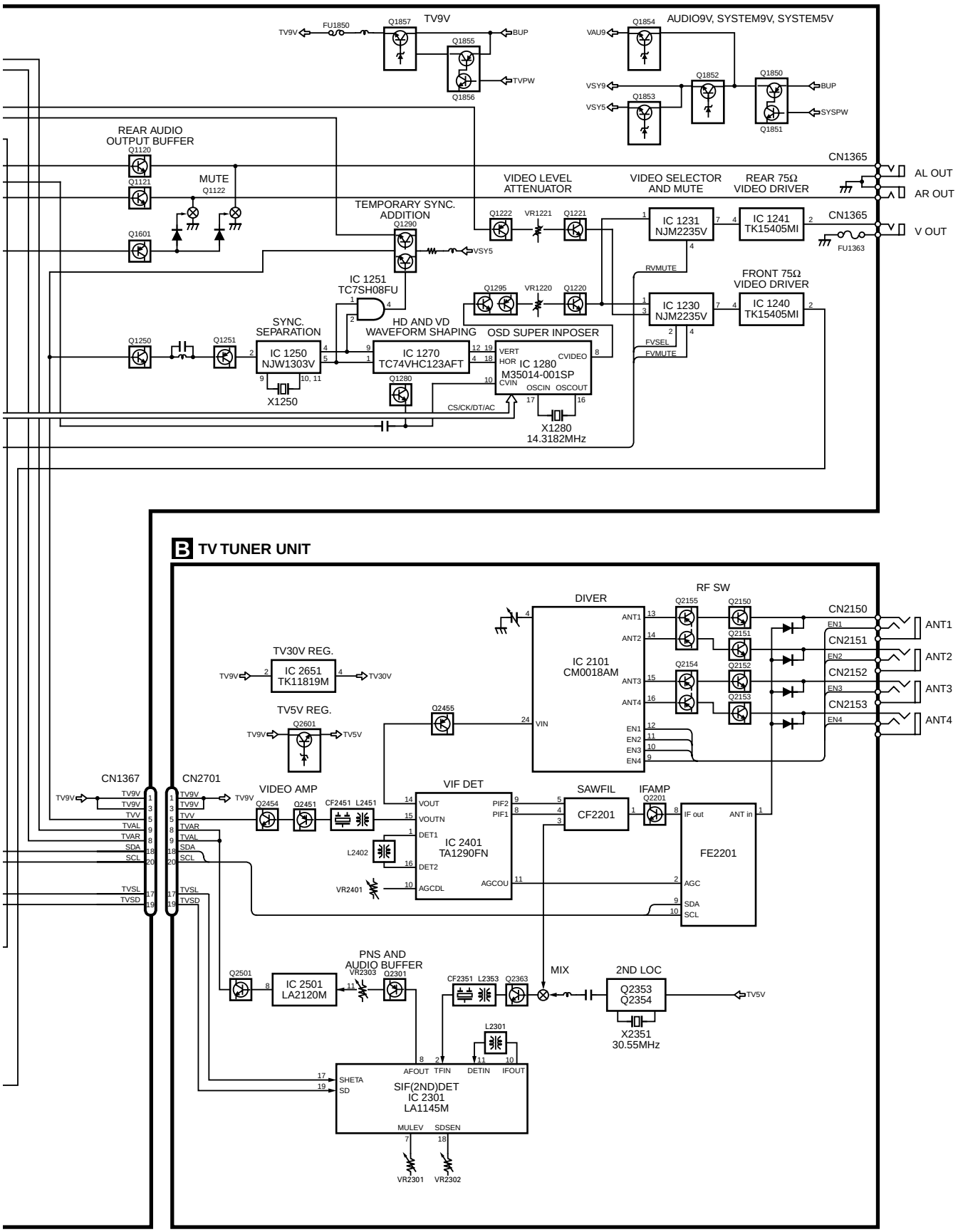
Mark	NO	Symbol and Description	GEX-P6400TV/UC	GEX-P6400TVP/EW	GEX-P6450TV/ES	GEX-P6450TVP/ES
	6	Case	CNB2798	CNB2797	CNB2796	CNB2799
	8	Mother Unit	CWM8240	CWM8242	CWM8298	CWM8299
	21	TV Tuner Unit	CWM8241	CWM8243	CWM8241	CWM8243
	34	Remote Control Assy	Not used	CXB8951	CXB8951	CXB8951
	35	Cover	Not used	CNS7068	CNS7068	CNS7068
	37	Front End	CWB1093	CWB1094	CWB1093	CWB1094

3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM

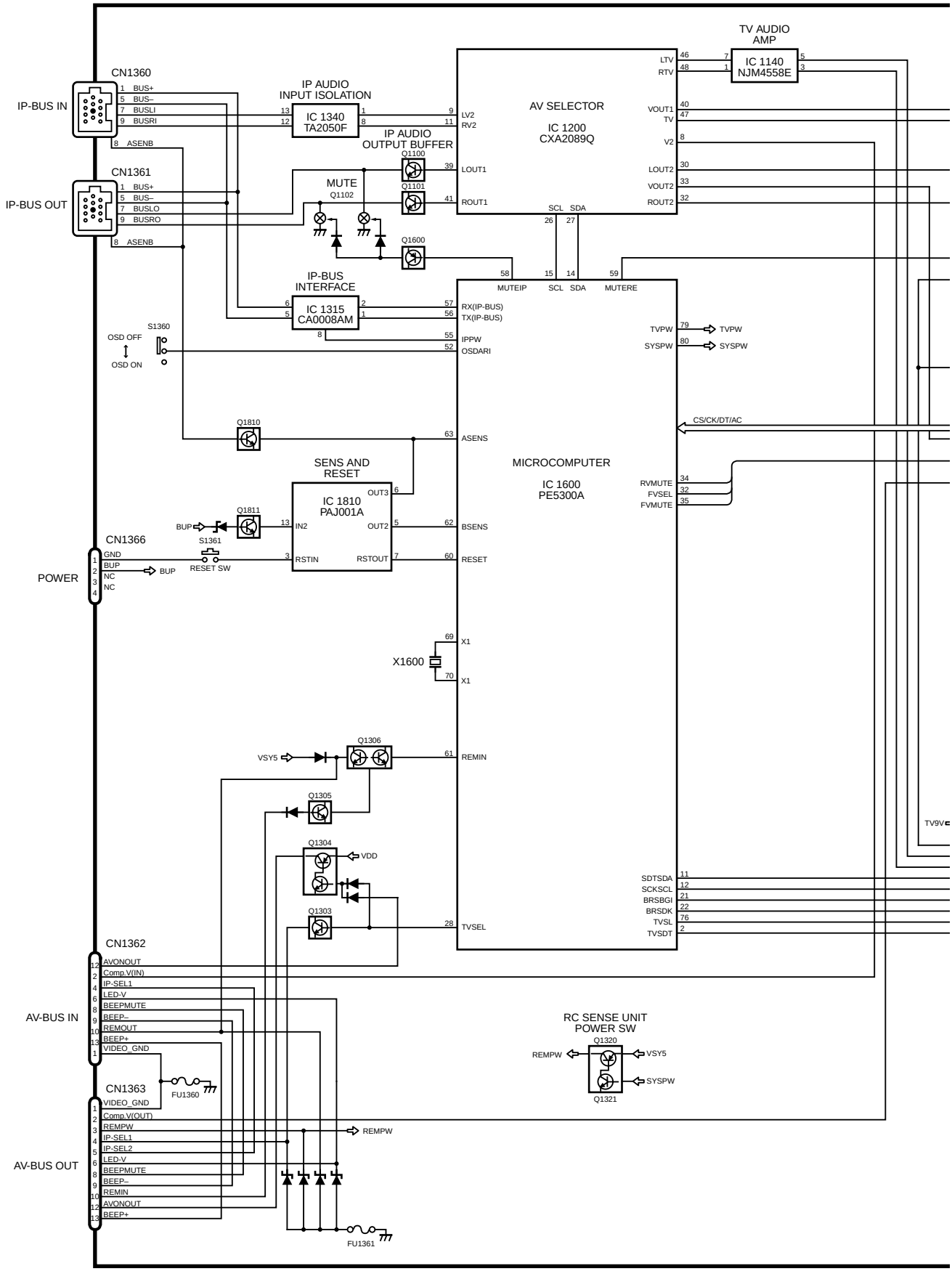
● **GEX-P6400TV/UC, GEX-P6450TV/ES**

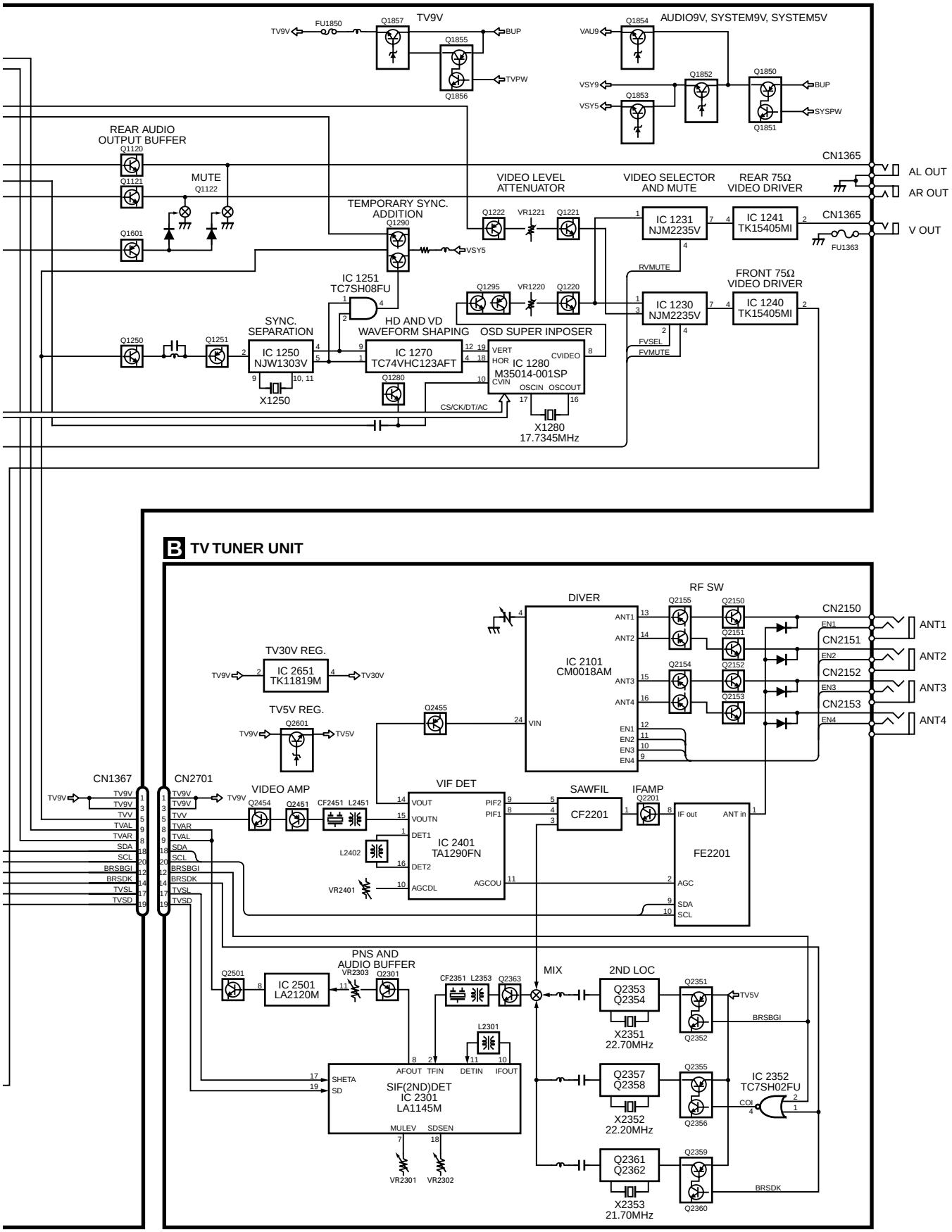



TV9V
FU1850
Q1857
Q1855
Q1856
BUP
TVPW
AUDIO9V, SYSTEM9V, SYSTEM5V
VAU9
Q1854
VSY9
Q1852
Q1850
VSY5
Q1853
SYSPW
Q1851
REAR AUDIO OUTPUT BUFFER
Q1120
Q1121
MUTE
Q1122
Q1601
TEMPORARY SYNC. ADDITION
Q1290
VSY5
VIDEO LEVEL ATTENUATOR
VIDEO SELECTOR AND MUTE
REAR 75Ω VIDEO DRIVER
Q1222
VR1221
Q1221
IC 1231 NJM2235V
IC 1241 TK15405MI
CN1365
AL OUT
AR OUT
V OUT
FU1363
RVMUTE
FRONT 75Ω VIDEO DRIVER
Q1295
VR1220
Q1220
IC 1230 NJM2235V
IC 1240 TK15405MI
FVSEL
FVMUTE
IC 1251 TC7SH08FU
SYNC. SEPARATION
HD AND VD WAVEFORM SHAPING
OSD SUPER INPOSER
Q1250
Q1251
IC 1250 NJW1303V
X1250
IC 1270 TC74VHC123AFT
Q1280
IC 1280 M35014-001SP
VERT
HOR
CVIN
CVIDEO
OSCIN
OSCOUT
CS/CK/DT/AC
X1280 14.3182MHz
B TV TUNER UNIT
RF SW
DIVER
IC 2101 CM0018AM
ANT1
ANT2
ANT3
ANT4
Q2155
Q2150
Q2151
Q2154
Q2152
Q2153
CN2150
CN2151
CN2152
CN2153
EN1
EN2
EN3
EN4
TV30V REG.
IC 2651 TK11819M
TV30V
TV5V REG.
Q2601
TV5V
Q2455
VIN
CN1367
CN2701
VIDEO AMP
Q2454
Q2451
CF2451
L2451
VIF DET
IC 2401 TA1290FN
VOUT
VOUTN
DET1
DET2
AGCDL
AGCOU
PIF2
PIF1
L2402
VR2401
SAWFIL
CF2201
IFAMP
Q2201
IF out
ANT in
FE2201
AGC
SDA
SCL
TVV
TVAL
TVAR
TVSL
TVSD
PNS AND AUDIO BUFFER
Q2501
IC 2501 LA2120M
VR2303
Q2301
MIX
CF2351
L2353
Q2363
2ND LOC
Q2353
Q2354
X2351 30.55MHz
L2301
SIF(2ND)DET IC 2301 LA1145M
AFOUT
TFIN
DETIN
IFOUT
SHETA
SD
MULEV
SDSEN
VR2301
VR2302

● GEX-P6400TVP/EW, GEX-P6450TVP/ES

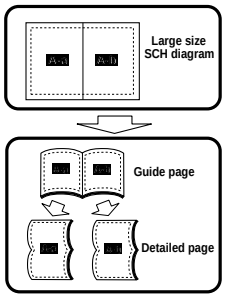
A MOTHER UNIT



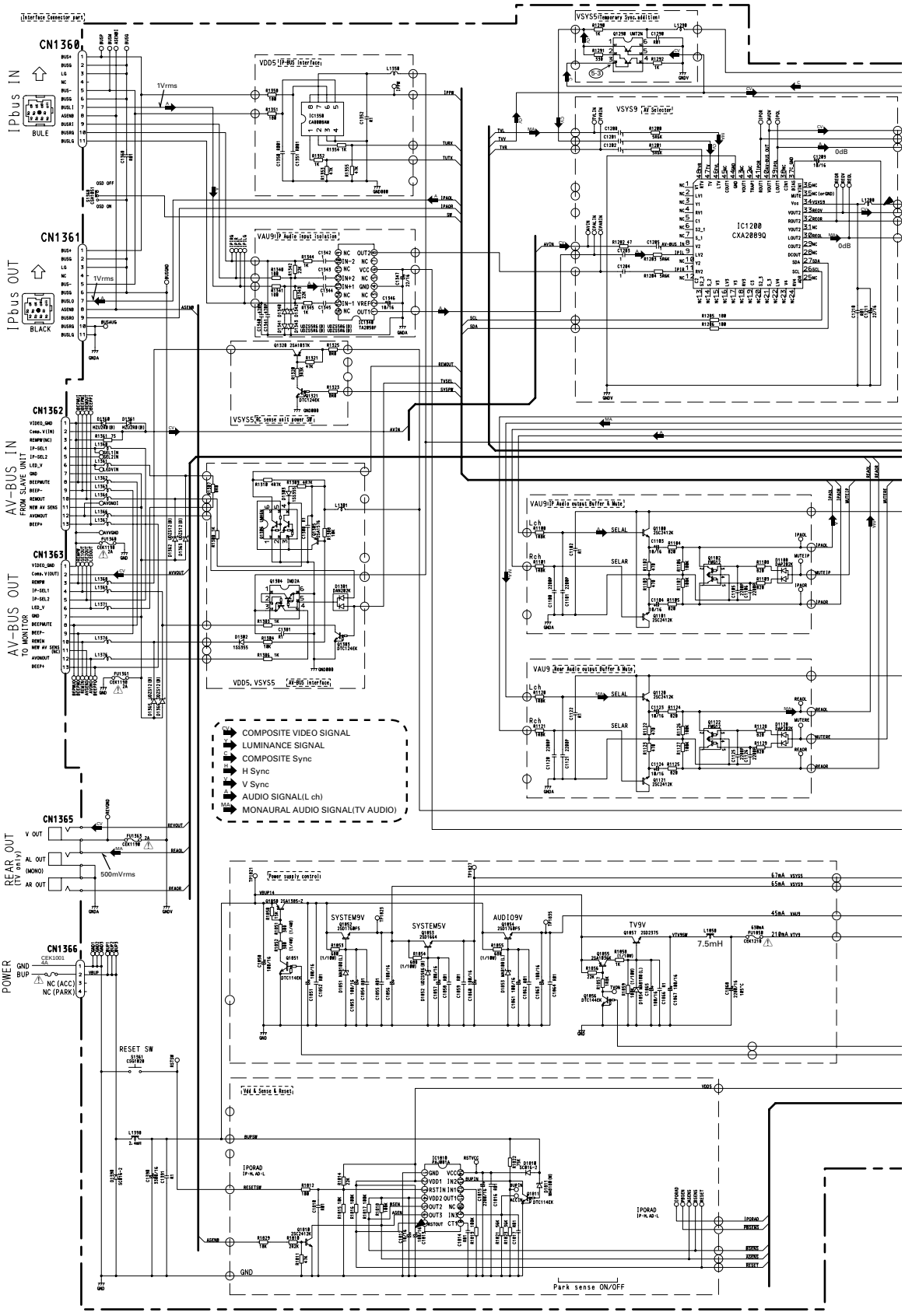

TV9V
FU1850
Q1857
BUP
Q1855
TVPW
Q1856
AUDIO9V, SYSTEM9V, SYSTEM5V
VAU9
Q1854
VSY9
Q1852
Q1850
BUP
VSY5
Q1853
SYSPW
Q1851
REAR AUDIO
OUTPUT BUFFER
Q1120
Q1121
MUTE
Q1122
Q1601
CN1365
AL OUT
AR OUT
V OUT
VIDEO LEVEL
ATTENUATOR
VIDEO SELECTOR
AND MUTE
REAR 75Ω
VIDEO DRIVER
TEMPORARY SYNC.
ADDITION
Q1290
VSY5
Q1222
VR1221
Q1221
IC 1231
NJM2235V
IC 1241
TK15405MI
CN1365
FU1363
IC 1251
TC7SH08FU
RVMUTE
FRONT 75Ω
VIDEO DRIVER
Q1295
VR1220
Q1220
IC 1230
NJM2235V
IC 1240
TK15405MI
SYNC.
SEPARATION
HD AND VD
WAVEFORM SHAPING
OSD SUPER INPOSER
FVSEL
FVMUTE
Q1250
Q1251
IC 1250
NJW1303V
IC 1270
TC74VHC123AFT
IC 1280
M35014-001SP
VERT
HOR
CVIN
CVIDEO
OSCIN
OSCOUT
X1250
Q1280
CS/CK/DT/AC
X1280
17.7345MHz
B TV TUNER UNIT
RF SW
DIVER
IC 2101
CM0018AM
ANT1
ANT2
ANT3
ANT4
VIN
EN1
EN2
EN3
EN4
Q2155
Q2150
Q2151
Q2154
Q2152
Q2153
CN2150
CN2151
CN2152
CN2153
TV30V REG.
IC 2651
TK11819M
TV30V
TV5V REG.
Q2601
TV5V
Q2455
CN1367
CN2701
TV9V
TVV
TVAL
TVAR
SDA
SCL
BRSBGI
BRSDK
TVSL
TVSD
VIDEO AMP
Q2454
Q2451
CF2451
L2451
VIF DET
IC 2401
TA1290FN
VOUT
VOUTN
DET1
DET2
AGCDL
AGCOU
PIF2
PIF1
L2402
VR2401
SAWFIL
CF2201
IFAMP
Q2201
FE2201
IF out
ANT in
AGC
SDA
SCL
PNS AND
AUDIO BUFFER
Q2501
IC 2501
LA2120M
VR2303
Q2301
CF2351
L2353
Q2363
MIX
2ND LOC
Q2353
Q2354
X2351
22.70MHz
Q2351
Q2352
L2301
SIF(2ND)DET
IC 2301
LA1145M
AFOUT
TFIN
DETIN
IFOUT
SHETA
SD
MULEV
SDSEN
VR2301
VR2302
Q2357
Q2358
X2352
22.20MHz
Q2355
Q2356
IC 2352
TC7SH02FU
COI
Q2361
Q2362
X2353
21.70MHz
Q2359
Q2360

3.2 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to " EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



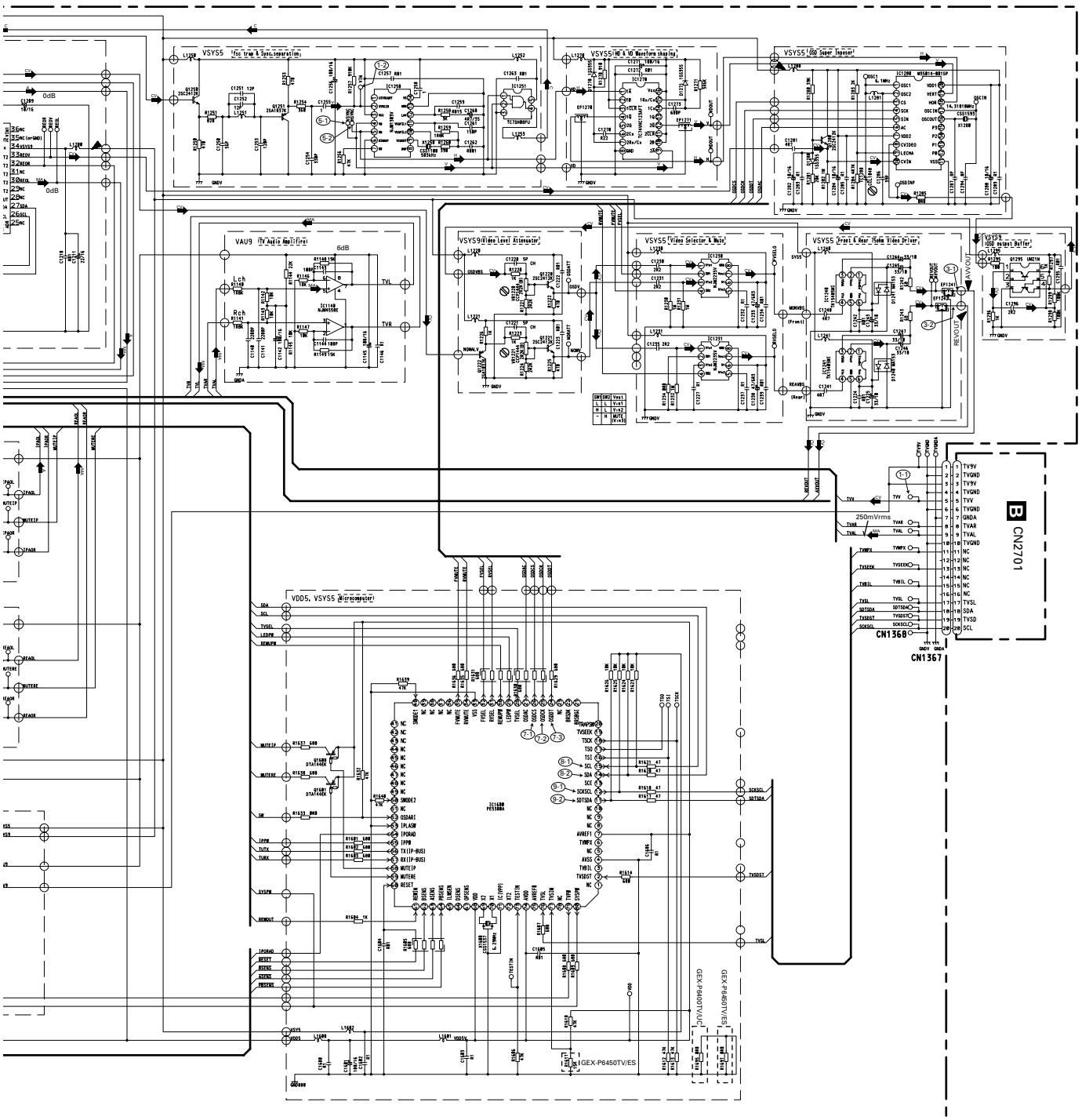
A-a



(GEX-P6400TV/UC,GEX-P6450TV/ES)

A-b

A MOTHER UNIT

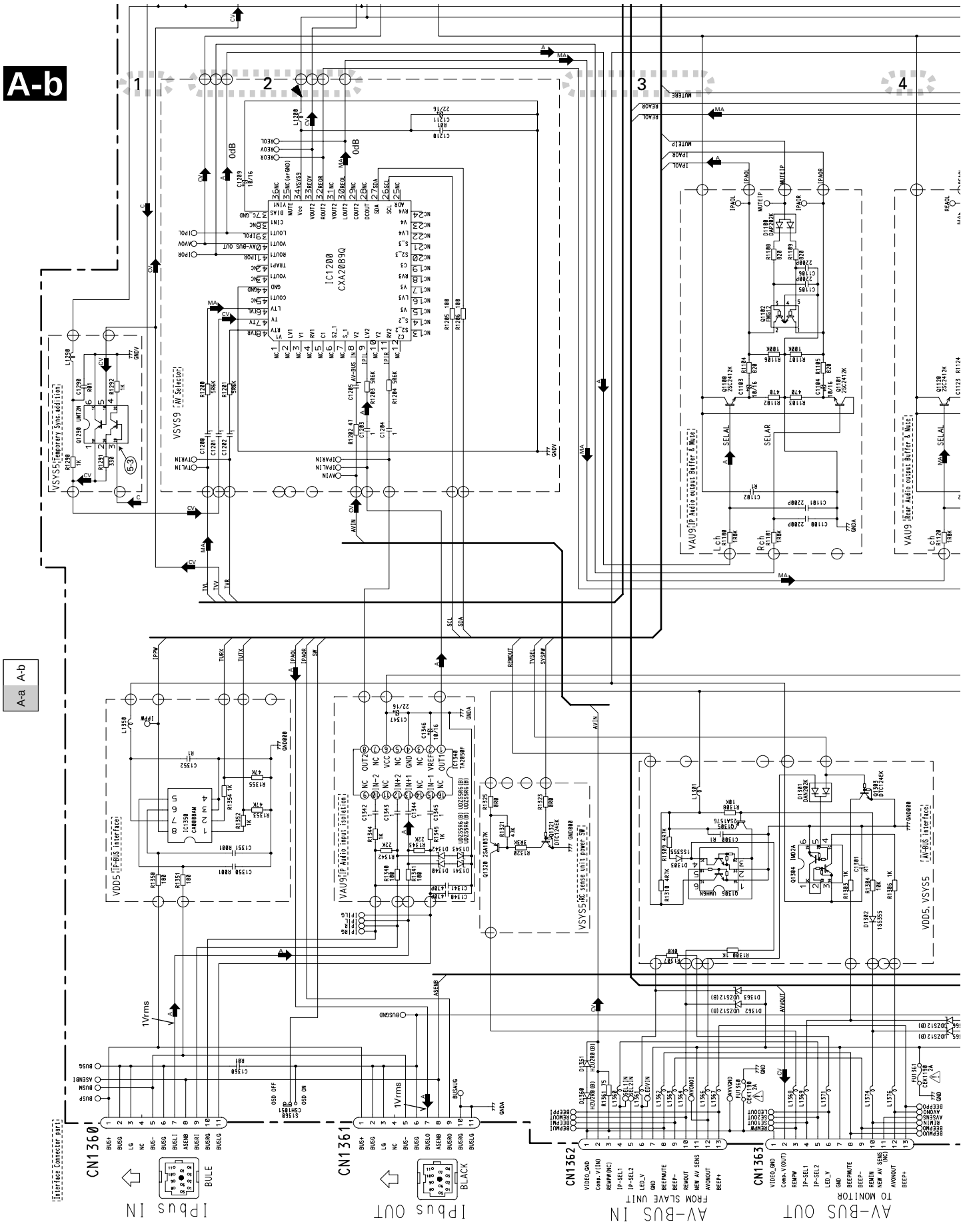


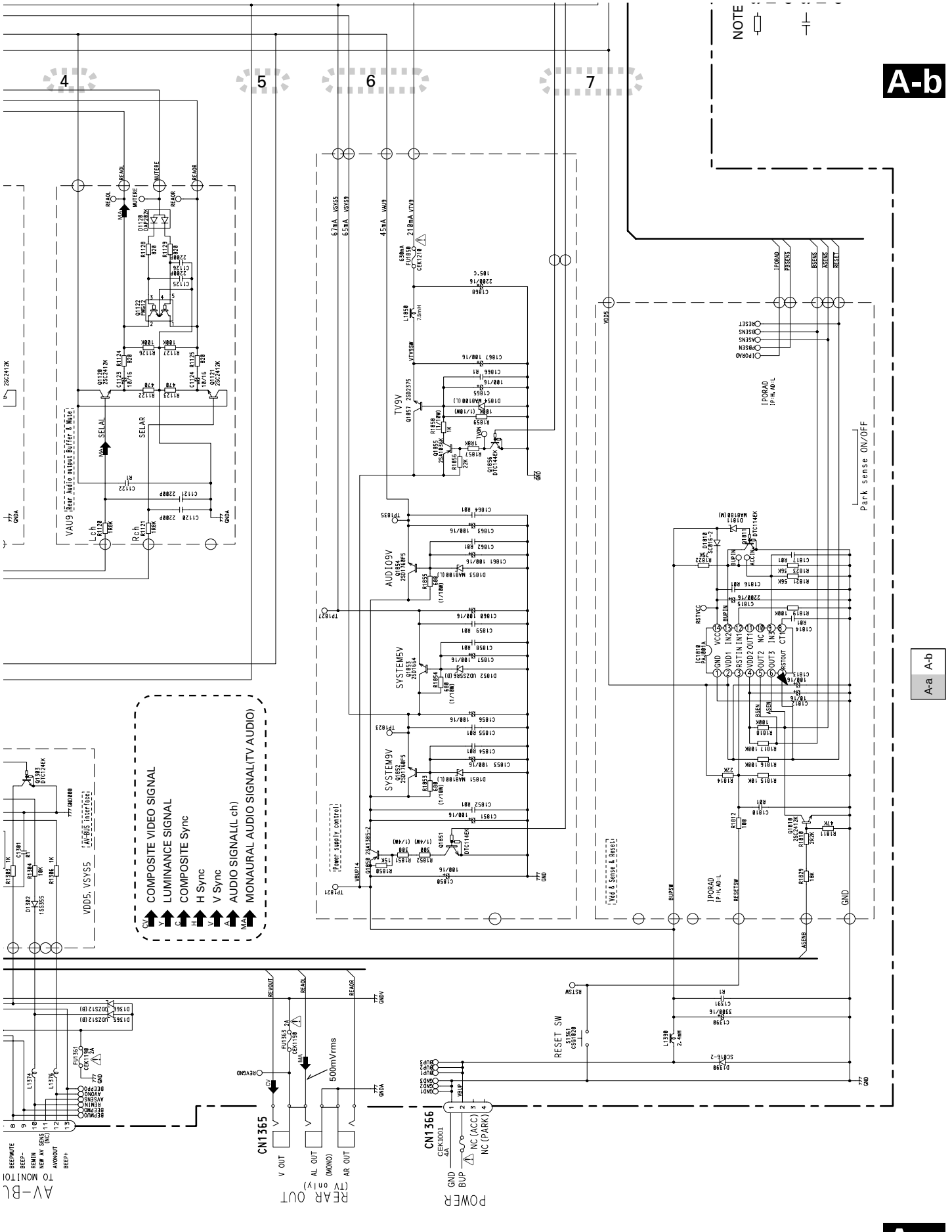
NOTE :

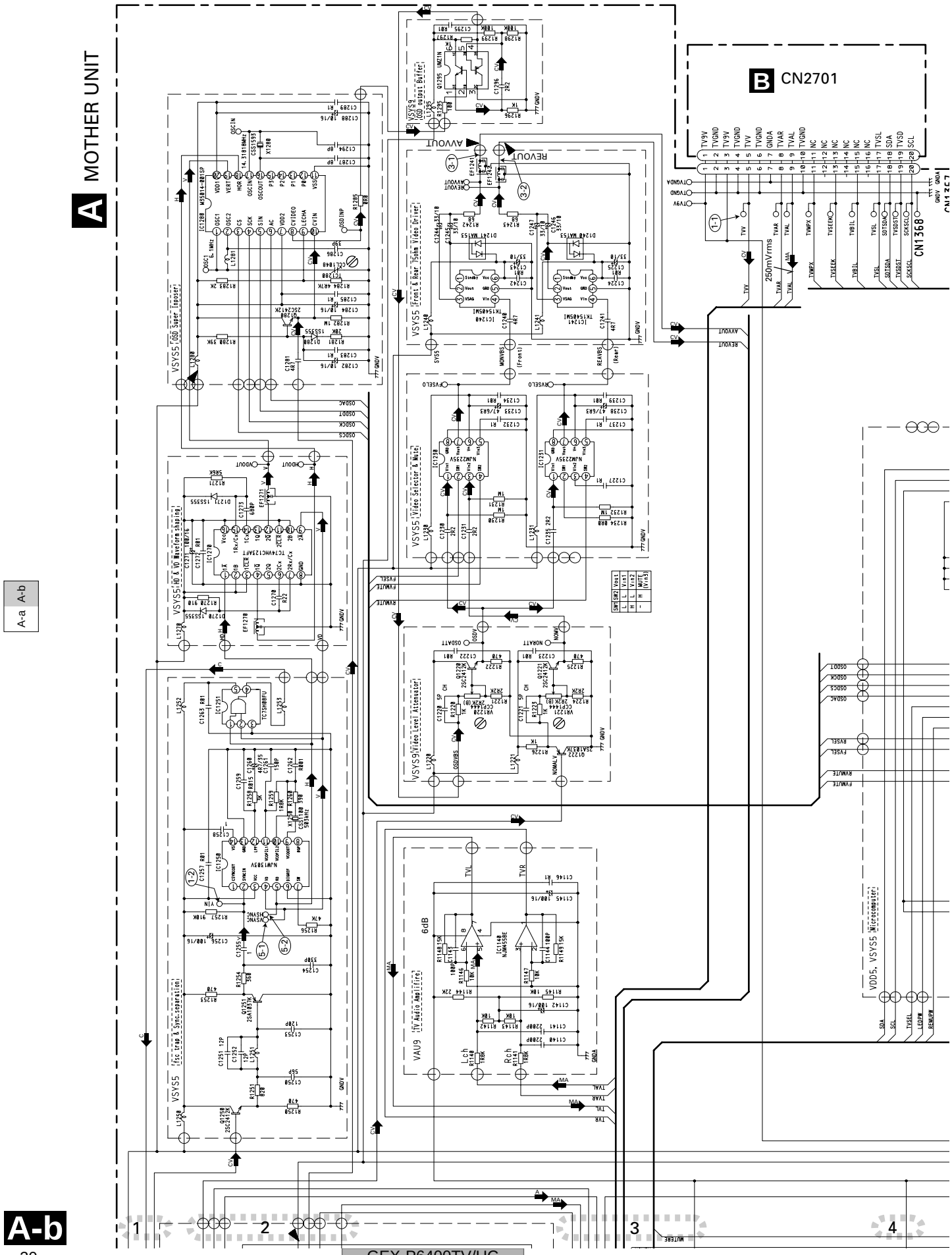
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

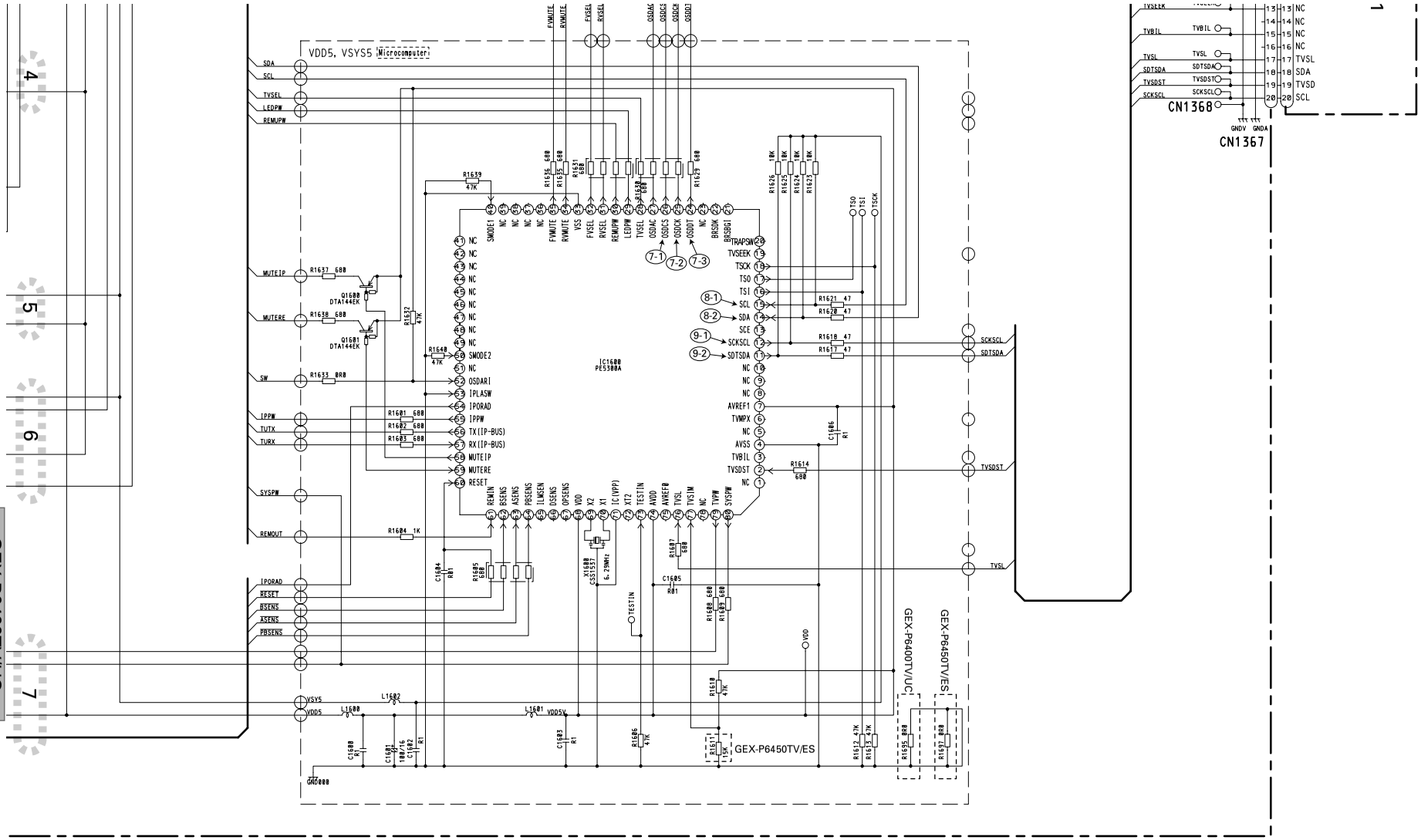
Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022

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.


A-b
A-a
IC1200
CXA2089Q
VSYS5 [Temporary Sync.addition]
VSYS9 [AV Selection]
VAU9 [IP Audio output Buffer & Mute]
VAU9 [Rear Audio output Buffer & Mute]
VDD5 [IP-BUS interface]
VAU9 [IP Audio input isolation]
VSYS5 [AC sense unit power SW]
VDD5, VSYS5 [AV-BUS interface]
CN1360
CN1361
CN1362
CN1363
IPbus IN
IPbus OUT
AV-BUS IN
AV-BUS OUT
FROM SLAVE UNIT
TO MONITOR
BULE
BLACK
Interface Connector part


A-b
A-a
COMPOSITE VIDEO SIGNAL
LUMINANCE SIGNAL
COMPOSITE Sync
H Sync
V Sync
AUDIO SIGNAL(L ch)
MONAURAL AUDIO SIGNAL(TV AUDIO)
CN1365
V OUT
AL OUT (MONO)
AR OUT
REAR OUT
(TV only)
CN1366
GND
BUP
NC (ACC)
NC (PARK)
POWER
RESET SW
S1561
Park sense ON/OFF
TO MONITOR
AV-BUS Interface
VDD5, VSYS5
Rear Audio output Buffer & Mute
TV9V
AUDIO9V
SYSTEM5V
SYSTEM9V
Power supply control
Vdd & Sense & Reset
500mVrms


A MOTHER UNIT
B CN2701
CN1368
VSYS5 OSD Super Imposer
VSYS5 Front & Rear 75ohm Video Driver
VSYS5 Video Selector & Mute
VSYS5 H/D & V/D Waveform Shaping
VSYS5 Sync Trap & Sync Separation
VSYS9 Video Level Attenuator
VAU9 5V Audio Amplifier
VSYS5 Microcomputer
AVVOUT
REVOUT
250mVrms
6dB
Lch
Rch
A-a
A-b
A-b



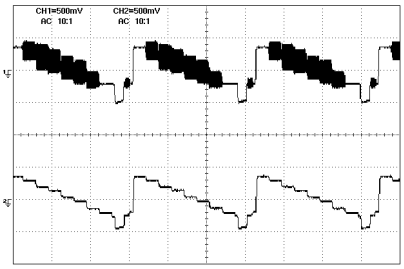
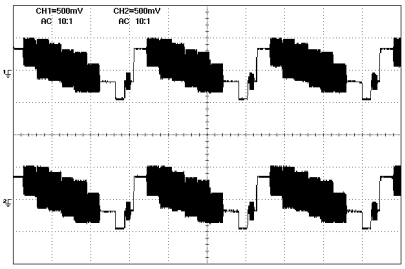
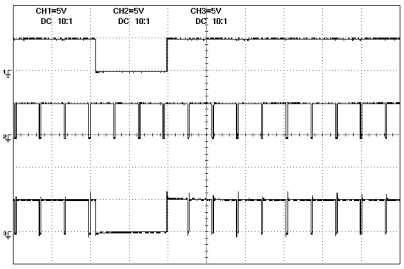
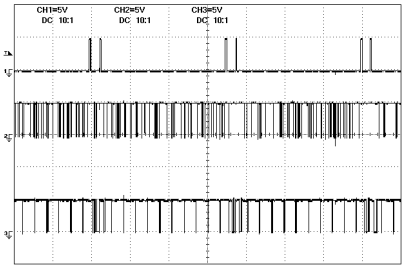
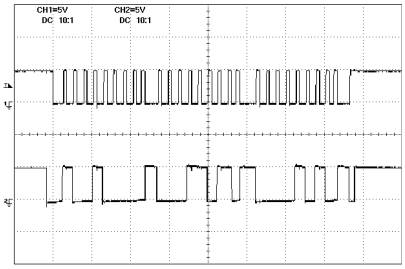
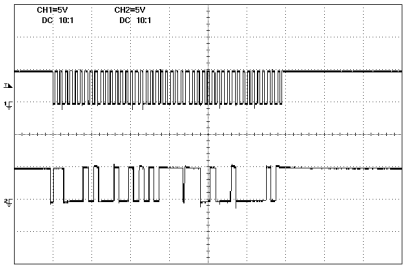
NOTE :

- Symbol indicates a resistor.
  No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor.
  No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as :
2.2 → 2R2
0.022 → R022

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.

● Mother Unit Waveform

Input signal: NTSC 75% color bar (RF signal) Input point: ANT1 (TV TUNER UNIT) Operation mode: Normal operation Measuring point 1-1: TVV 1-2: YIN  20µs/div	Input signal: NTSC 75% color bar Input point: AV-BUS IN Operation mode: Service mode 1 Measuring point 3-1: AVVOUT 3-2: REVOUT  20µs/div	Input signal: None Input point: None Operation mode: Service mode 1 Measuring point 5-1: VSYNC 5-2: HSYNC 5-3: Q1290 Pin 3  100µs/div
Input signal: None Input point: None Operation mode: Reset and start Measuring point 7-1: IC1600 Pin 26 7-2: IC1600 Pin 25 7-3: IC1600 Pin 24  50ms/div	Input signal: None Input point: None Operation mode: Reset and start Measuring point 8-1: IC1600 Pin 15 8-2: IC1600 Pin 14  100µs/div	Input signal: None Input point: None Operation mode: Reset and start Measuring point 9-1: IC1600 Pin 12 9-2: IC1600 Pin 11  100µs/div

A

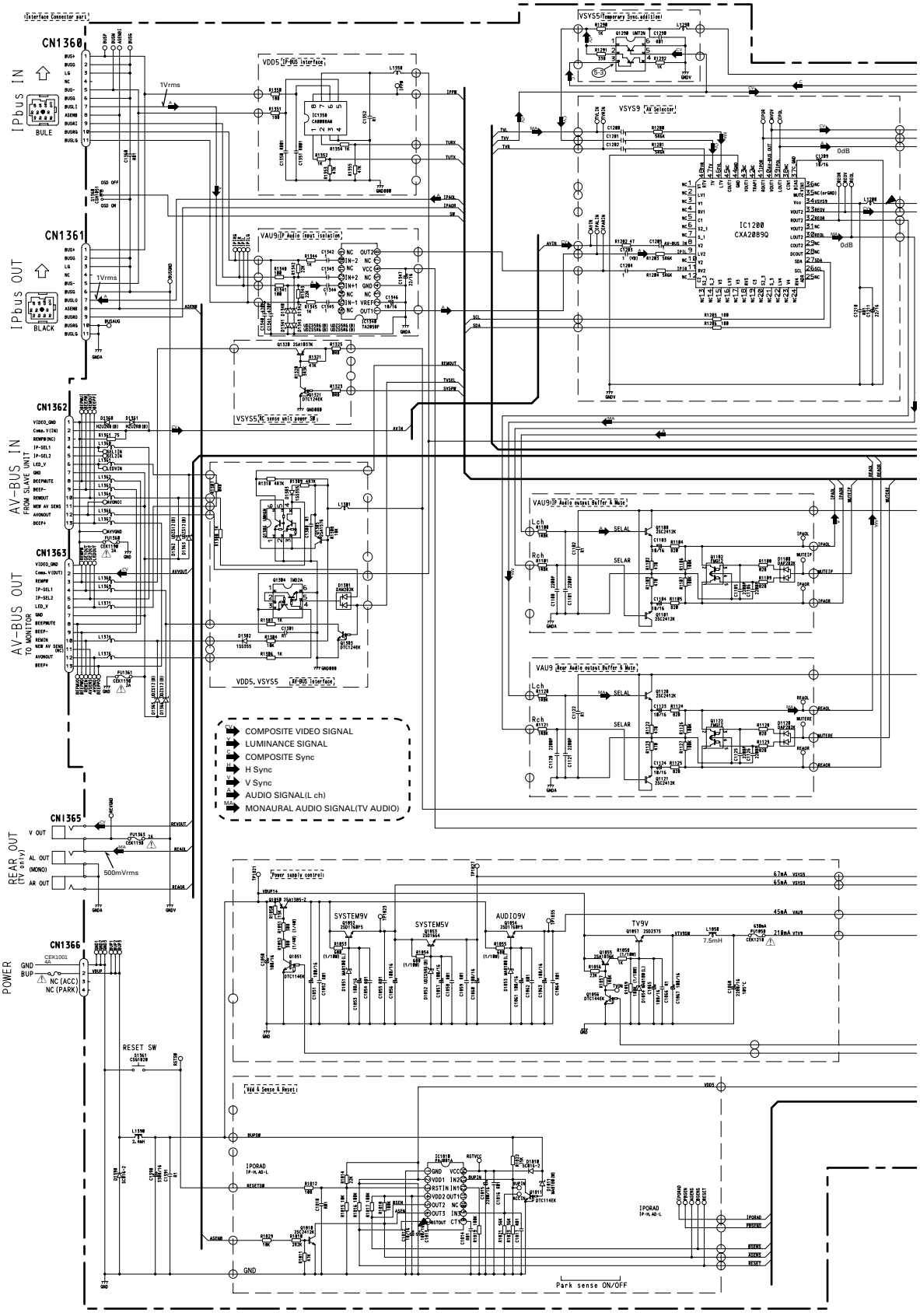
B

C

D

3.3 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

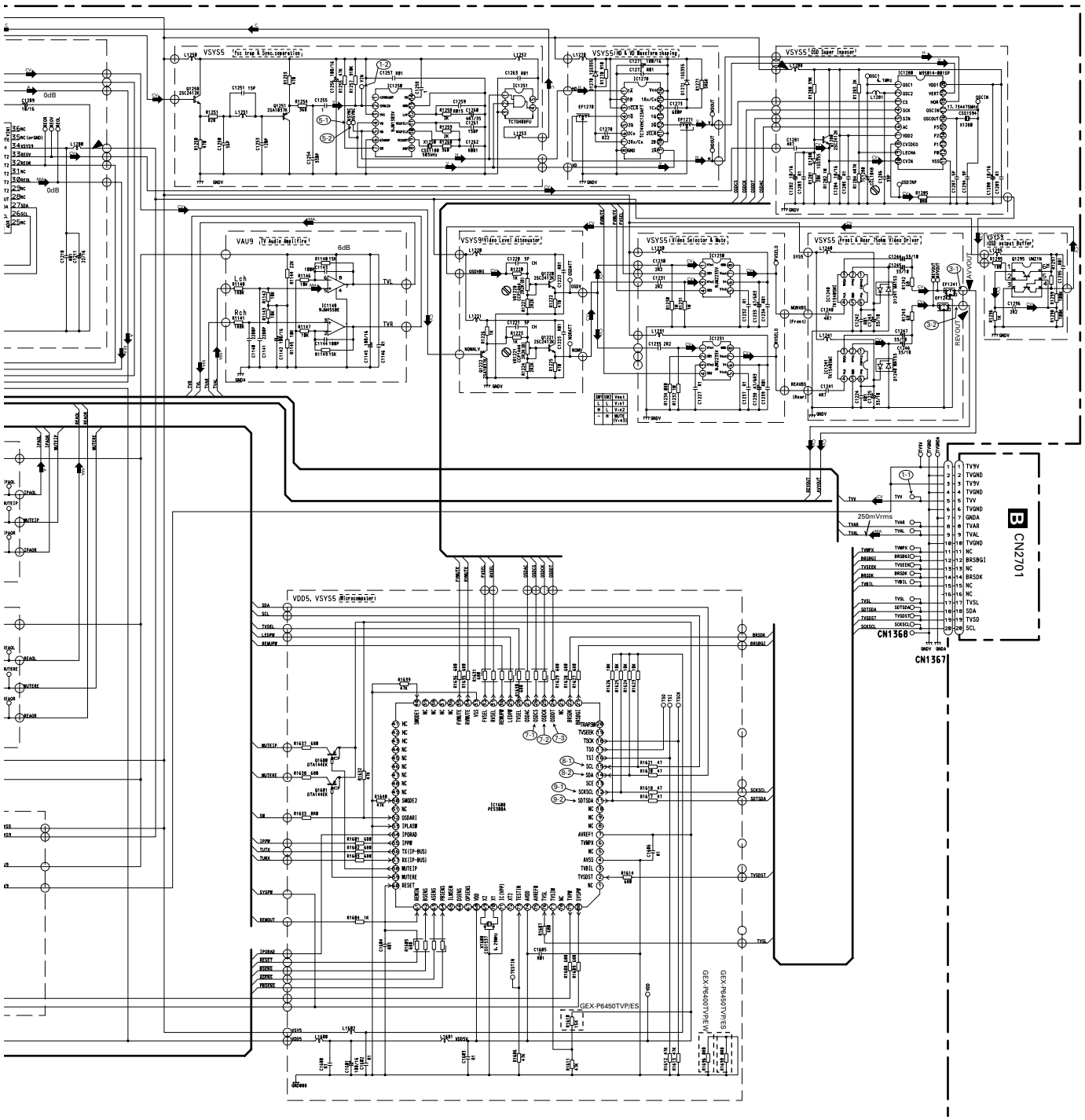
A-a



(GEX-P6400TVP/EW,GEX-P6450TVP/ES)

A-b

A MOTHER UNIT

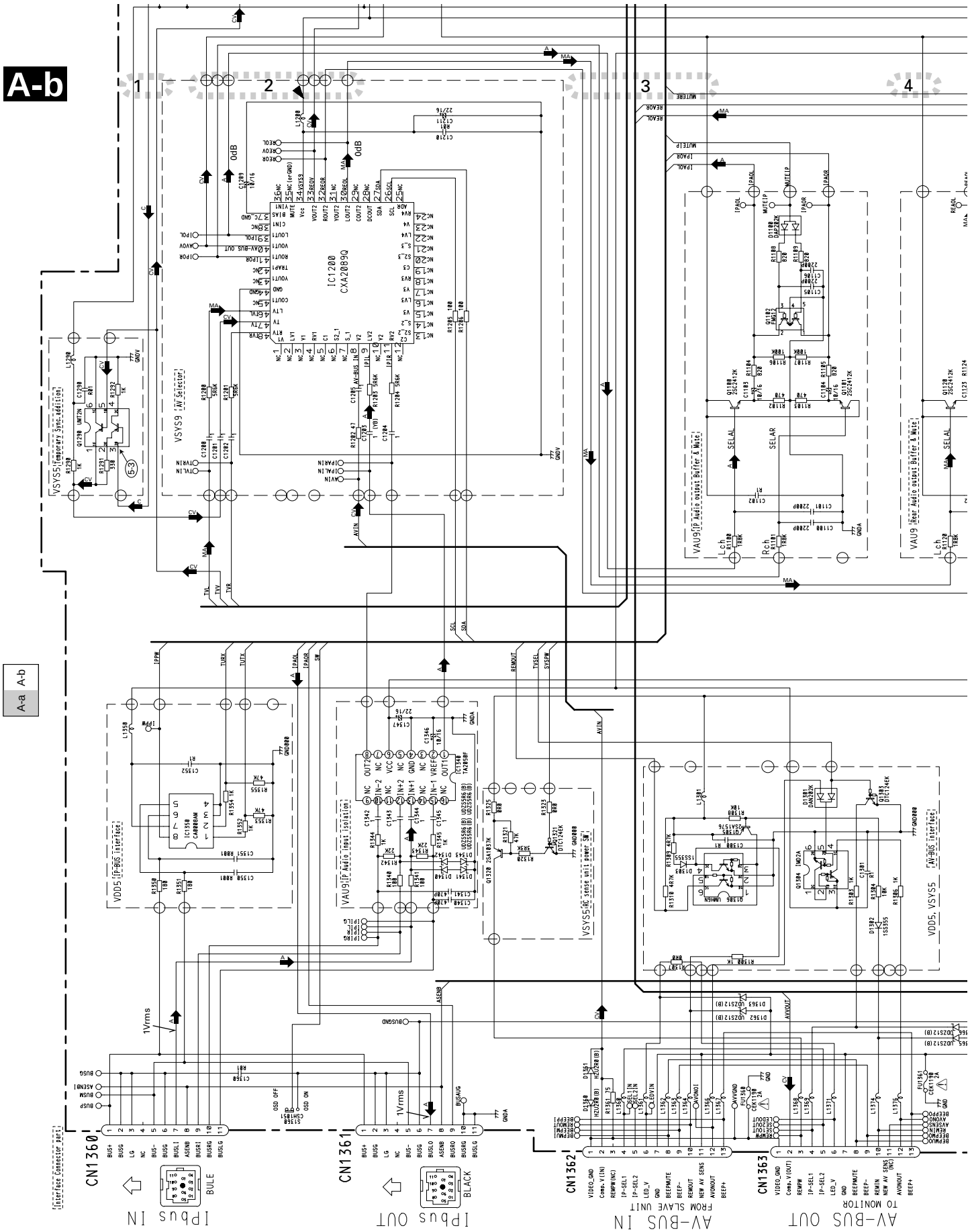


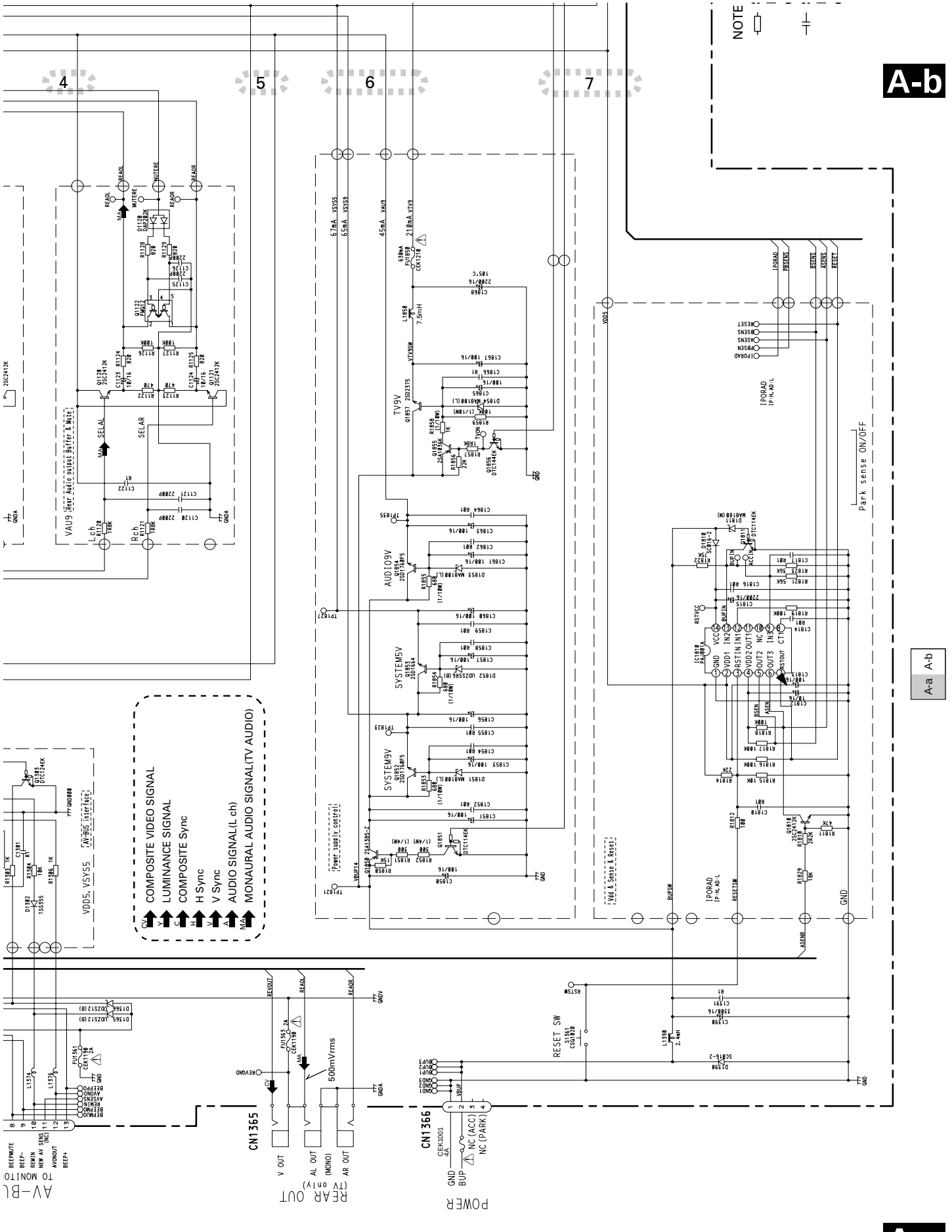
NOTE :

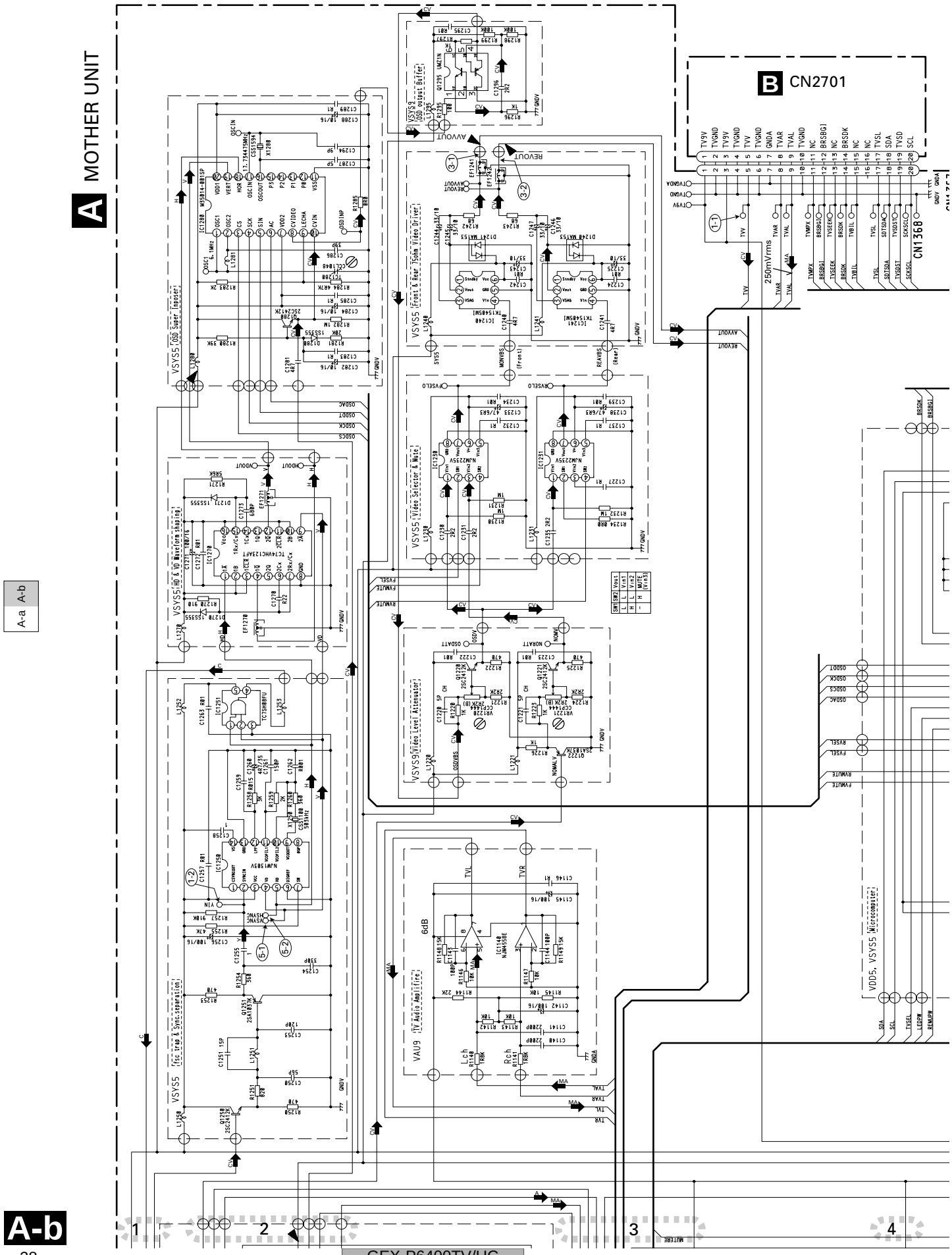
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

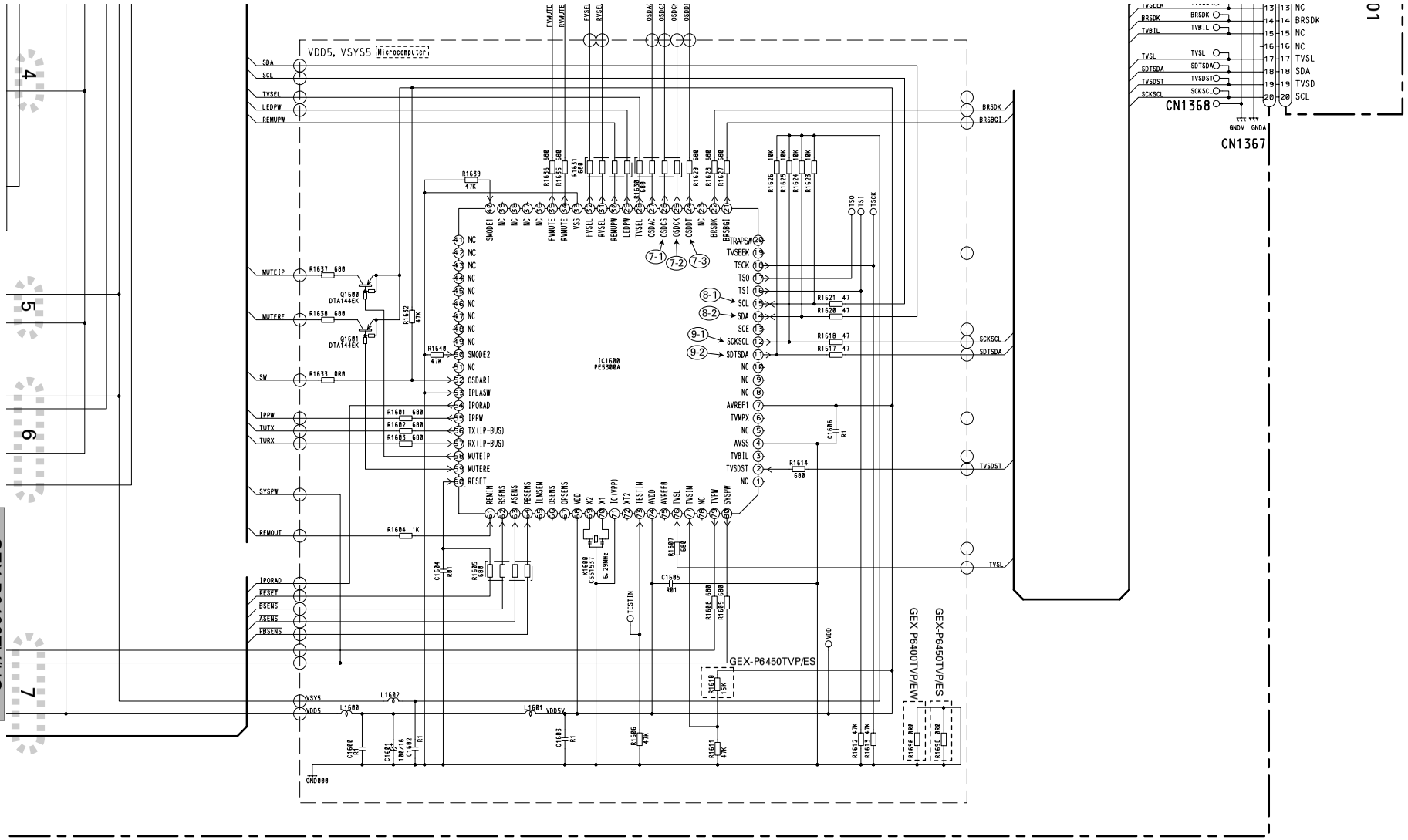
Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022

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.


A-b
A-a
IC1200
CXA2089Q
VSYS5 [Temporary Sync addition]
VSYS9 [AV Selector]
VAU9 [P Audio output Buffer & Mute]
VAU9 [Rear Audio output Buffer & Mute]
VDD5 [P-BUS interface]
VAU9 [P Audio input isolation]
VSYS5 [AC sense unit power SW]
VDD5, VSYS5 [AV-BUS interface]
IC1350
CAN08BAN
CN1360
CN1361
CN1362
CN1363
IPbus IN
IPbus OUT
AV-BUS IN
AV-BUS OUT
FROM SLAVE UNIT
TO MONITOR
BULE
BLACK
1Vrms
Interface Connector part


A-b
A-a
COMPOSITE VIDEO SIGNAL
LUMINANCE SIGNAL
COMPOSITE Sync
H Sync
V Sync
AUDIO SIGNAL(L ch)
MONAURAL AUDIO SIGNAL(TV AUDIO)
CN1365
V OUT
AL OUT (MONO)
AR OUT
REAR OUT (TV only)
CN1366
GND
BUP
NC (ACC)
NC (PARK)
POWER
500mVrms
RESET SW
Park sense ON/OFF
Rear Audio output Buffer & Mute
Power supply control
Vdd & Sense & Reset
AV-BUS interface
TO MONITOR


A MOTHER UNIT
B CN2701
CN1368
250mVrms
VSYS5 OSD Super Imposer
VSYS5 Front & Rear 75ohm Video Driver
VSYS5 Video Selector & Mute
VSYS5 H/D & I/O Waveform Shaping
VSYS9 Video Level Attenuator
VSYS5 Sync Trap & Sync Separation
VAU9 TV Audio Amplifier
6dB
VDD5, VSYS5 Microcomputer
A-a
A-b



NOTE :

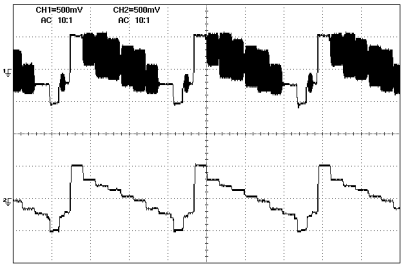
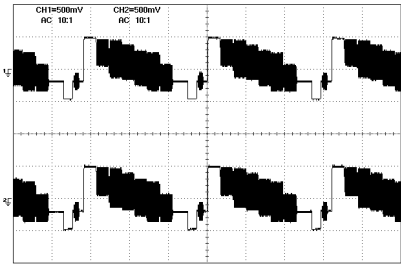
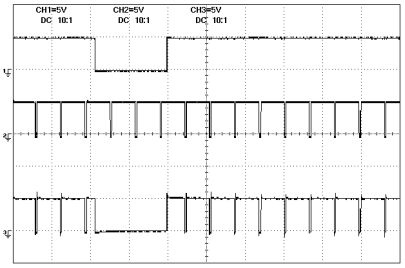
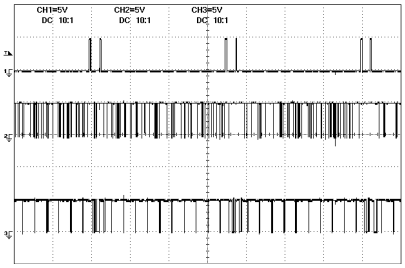
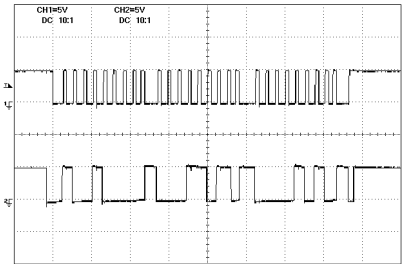
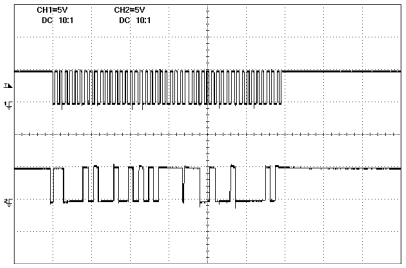
- Symbol indicates a resistor.
  No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor.
  No differentiation is made between chip capacitors and discrete capacitors.

Decimal points for resistor and capacitor fixed values are expressed as :
2.2 → 2R2
0.022 → R022

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.

A-a A-b

● Mother Unit Waveform

Input signal: PAL 100% color bar (RF signal) Input point: ANT1 (TV TUNER UNIT) Operation mode: Normal operation Measuring point 1-1: TVV 1-2: YIN  20µs/div	Input signal: PAL 100% color bar Input point: AV-BUS IN Operation mode: Service mode 1 Measuring point 3-1: AVVOUT 3-2: REVOUT  20µs/div	Input signal: None Input point: None Operation mode: Service mode 1 Measuring point 5-1: VSYNC 5-2: HSYNC 5-3: Q1290 Pin 3  100µs/div
Input signal: None Input point: None Operation mode: Reset and start Measuring point 7-1: IC1600 Pin 26 7-2: IC1600 Pin 25 7-3: IC1600 Pin 24  50ms/div	Input signal: None Input point: None Operation mode: Reset and start Measuring point 8-1: IC1600 Pin 15 8-2: IC1600 Pin 14  100µs/div	Input signal: None Input point: None Operation mode: Reset and start Measuring point 9-1: IC1600 Pin 12 9-2: IC1600 Pin 11  100µs/div

A

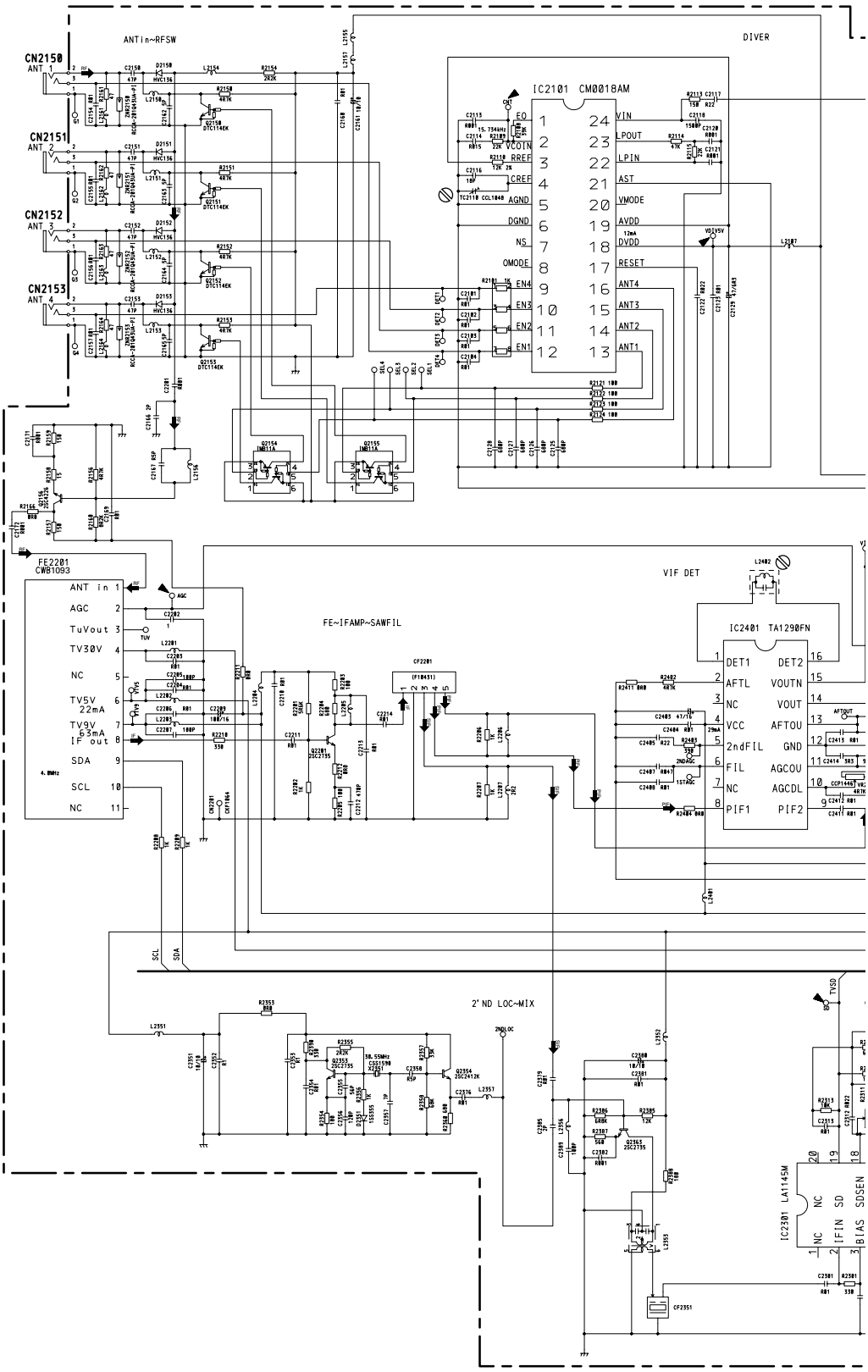
B

C

D

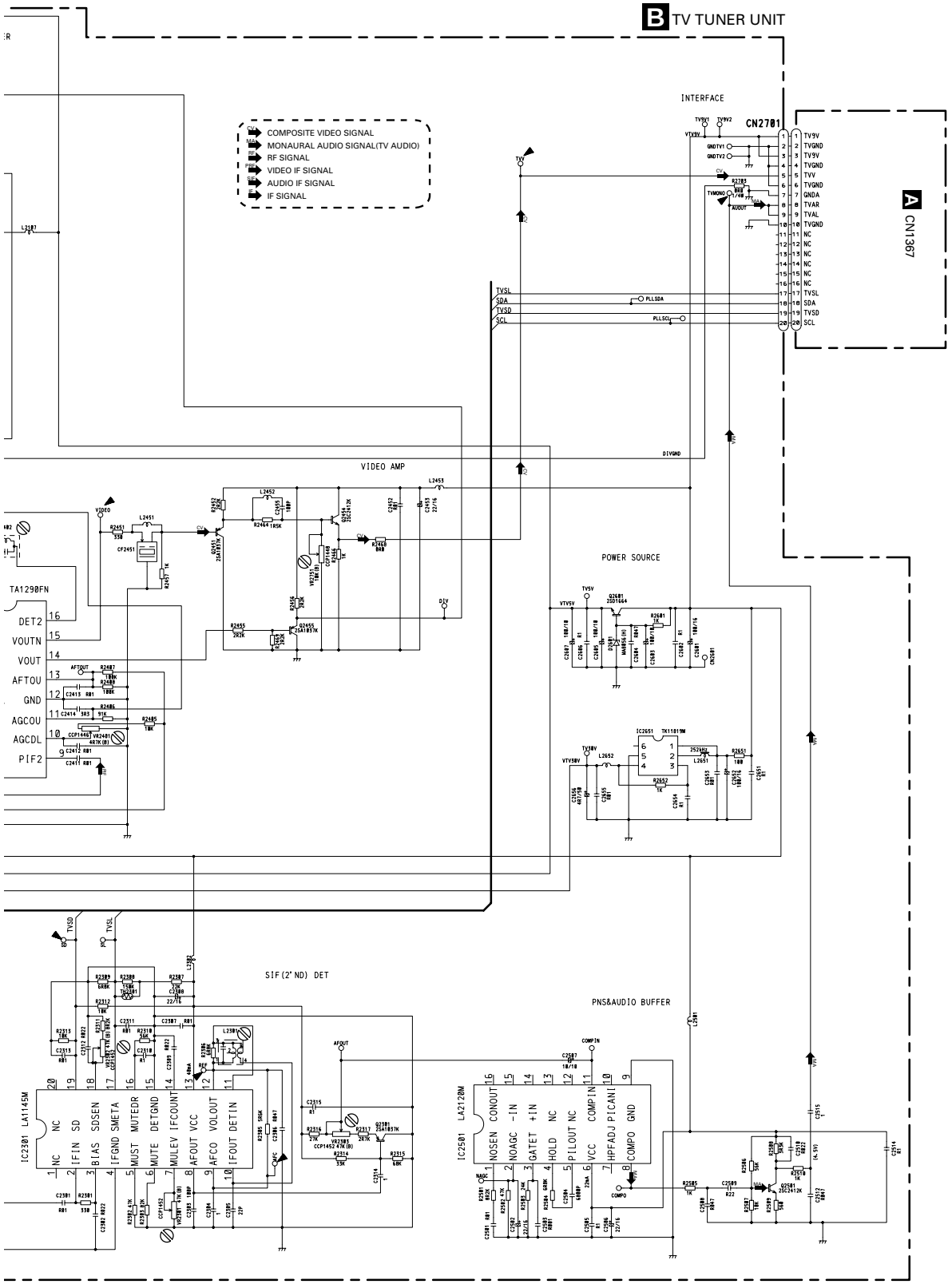
3.4 TV TUNER UNIT(GUIDE PAGE)(GEX-P6400TV/UC, GEX-P6450TV/ES)

B-a

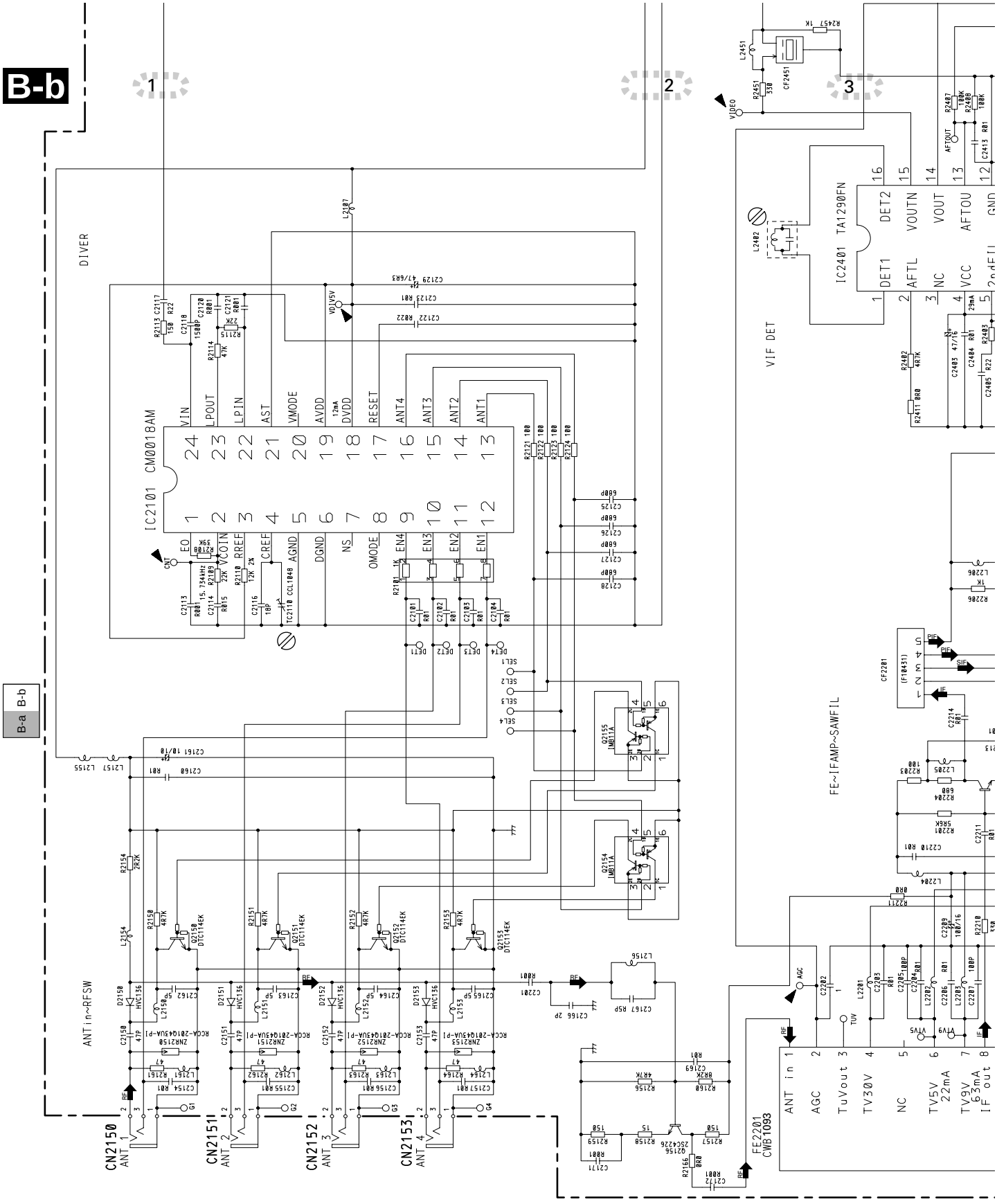


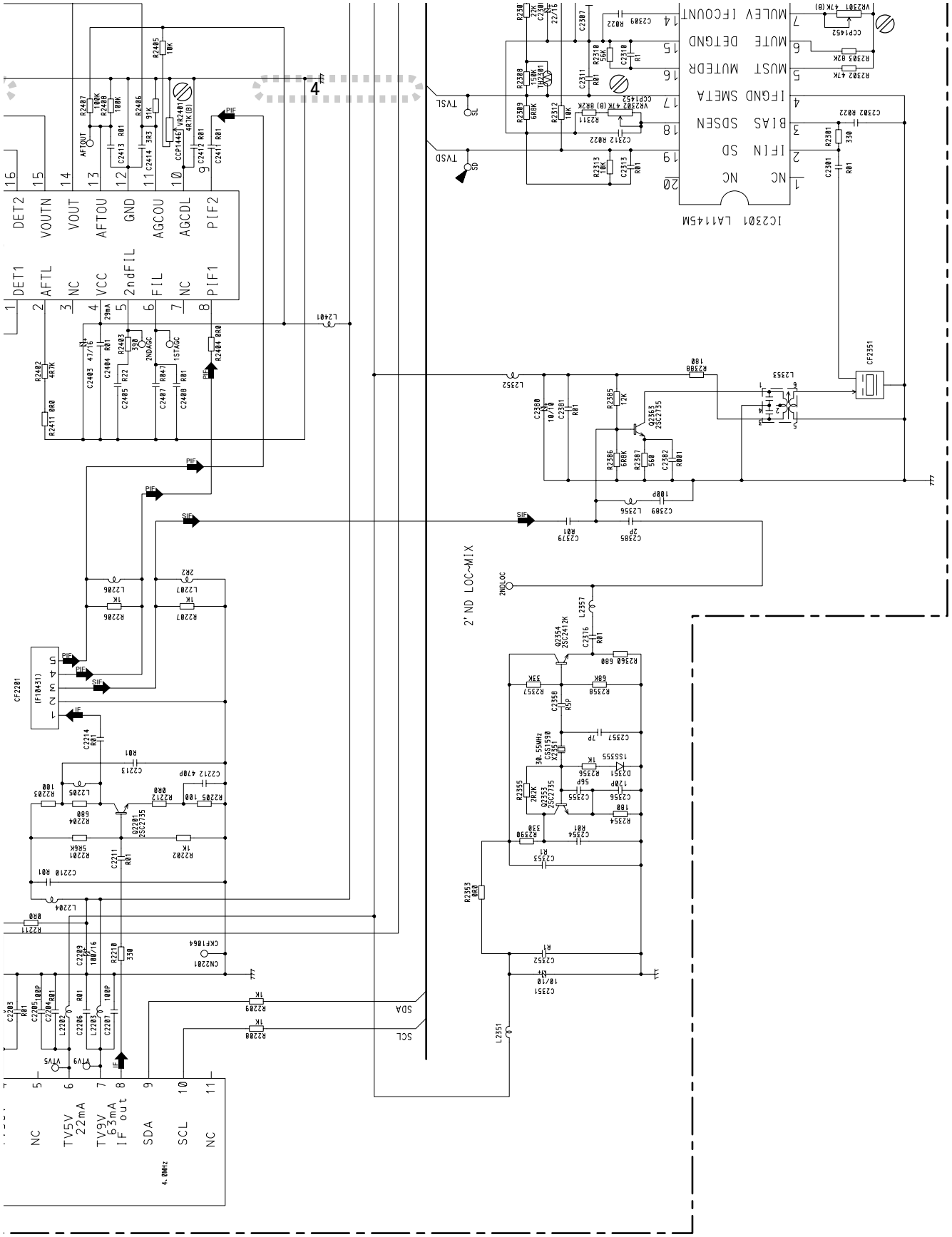
B

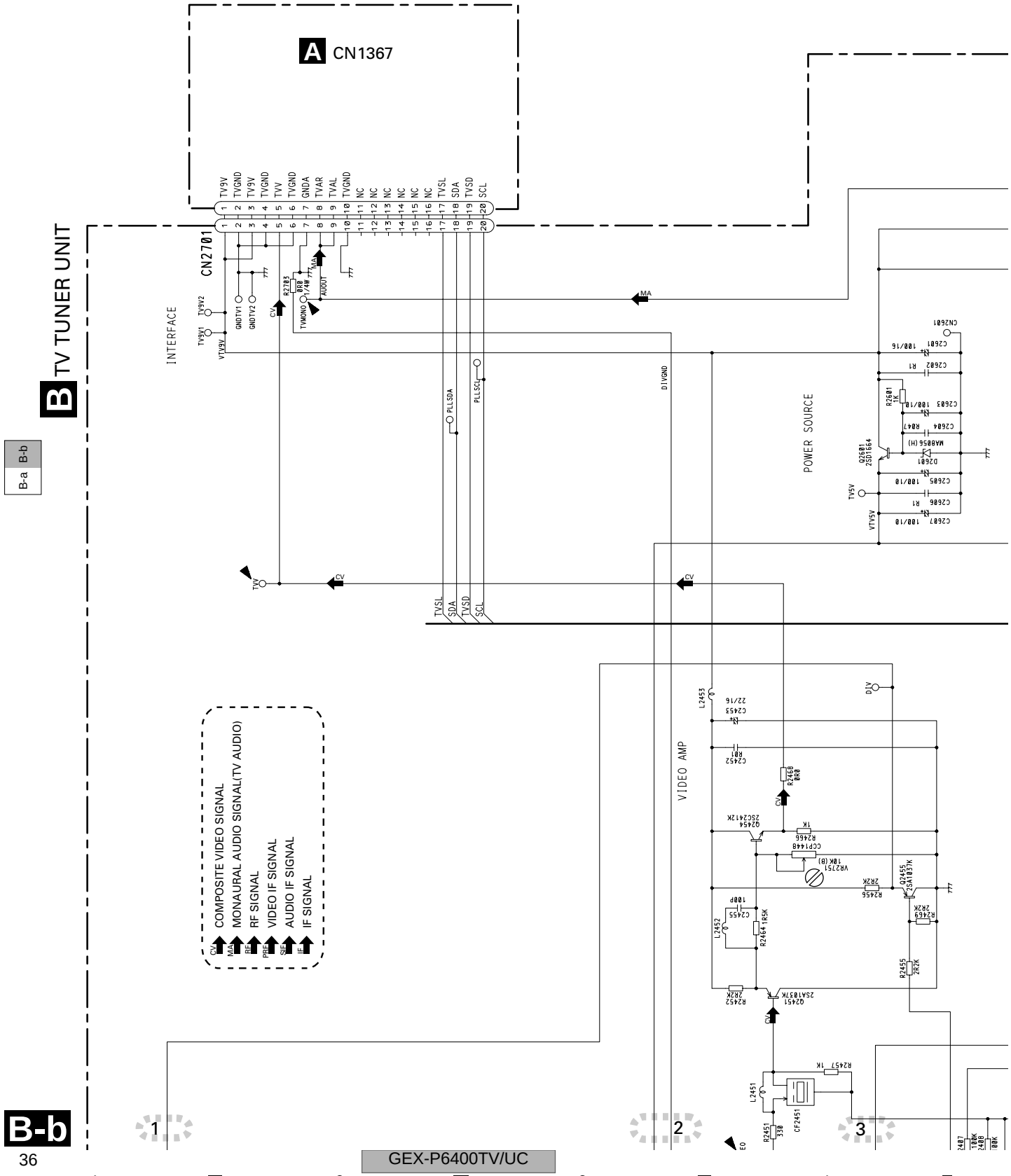
B-b

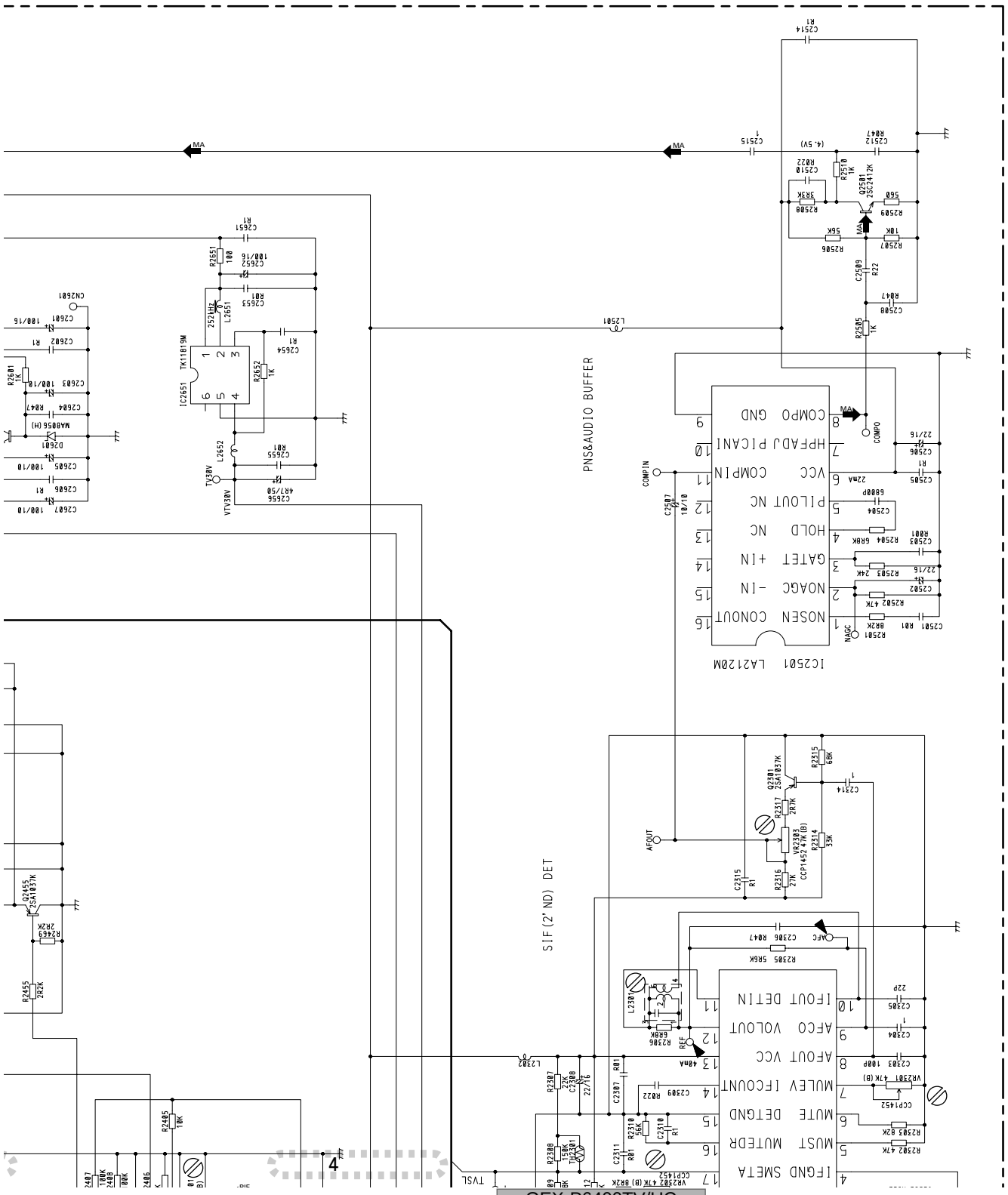

B TV TUNER UNIT
COMPOSITE VIDEO SIGNAL
MONAURAL AUDIO SIGNAL(TV AUDIO)
RF SIGNAL
VIDEO IF SIGNAL
AUDIO IF SIGNAL
IF SIGNAL
INTERFACE
CN2701
A CN1367
TV9V
TVGND
TVV
TVAR
TVAL
GNDA
NC
TVSL
SDA
TVSD
SCL
PLLSDA
PLLSCL
VIDEO AMP
POWER SOURCE
SIF(2'ND) DET
PNS&AUDIO BUFFER
IC2301 LA1145M
IC2501 LA2120M
TA1290FN
DET2
VOUTN
VOUT
AFTOU
GND
AGCOU
AGCDL
PIF2

B


B-b
B-a
DIVER
IC2101 CM0018AM
VIN
LPOUT
LPIN
AST
VMODE
AVDD
DVDD
RESET
ANT4
ANT3
ANT2
ANT1
EO
VCOIN
RREF
CREF
AGND
DGND
NS
OMODE
EN4
EN3
EN2
EN1
VIF DET
IC2401 TA1290FN
DET1
AFTL
NC
VCC
DET2
VOUTN
VOUT
AFTOU
GND
FE~IFAMP~SAWFIL
ANTin~RFSW
CN2150
CN2151
CN2152
CN2153
ANT 1
ANT 2
ANT 3
ANT 4
FE2201
CWB1093
ANT in
AGC
TuVout
TV30V
NC
TV5V 22mA
TV8V 63mA
IF out

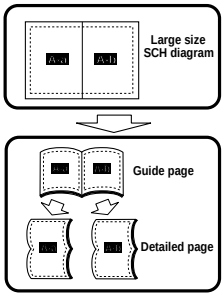

B-b
B-a
2' ND LOC~MIX
IC2301 LA1145M
DET2
VOUTN
VOUT
AFTOU
GND
AGCOU
AGCDL
PIF2
DET1
AFTL
NC
VCC
2ndFIL
FIL
NC
PIF1
NC
TV5V 22mA
TV9V 63mA
IF out
SDA
SCL
NC
4.0MHz
MULEV
IFCOUNT
MUST
MUTEDR
MUTE
DETGND
IFGND
SMETA
BIAS
SDSEN
IFIN
SD
NC
NC
TVSL
TVSD
SDA
SCL
2ND LOC
CF2351
CF2201
(F10431)
X2351
30.55MHz
CSS1598
Q2353
2SC2735
Q2354
2SC2412K
Q2201
2SC2735


A CN1367
B TV TUNER UNIT
CN2701
INTERFACE
POWER SOURCE
VIDEO AMP
CV COMPOSITE VIDEO SIGNAL
MA MONAURAL AUDIO SIGNAL(TV AUDIO)
RF RF SIGNAL
PIF VIDEO IF SIGNAL
SIF AUDIO IF SIGNAL
IF IF SIGNAL
B-a B-b
B-b
1
2
3

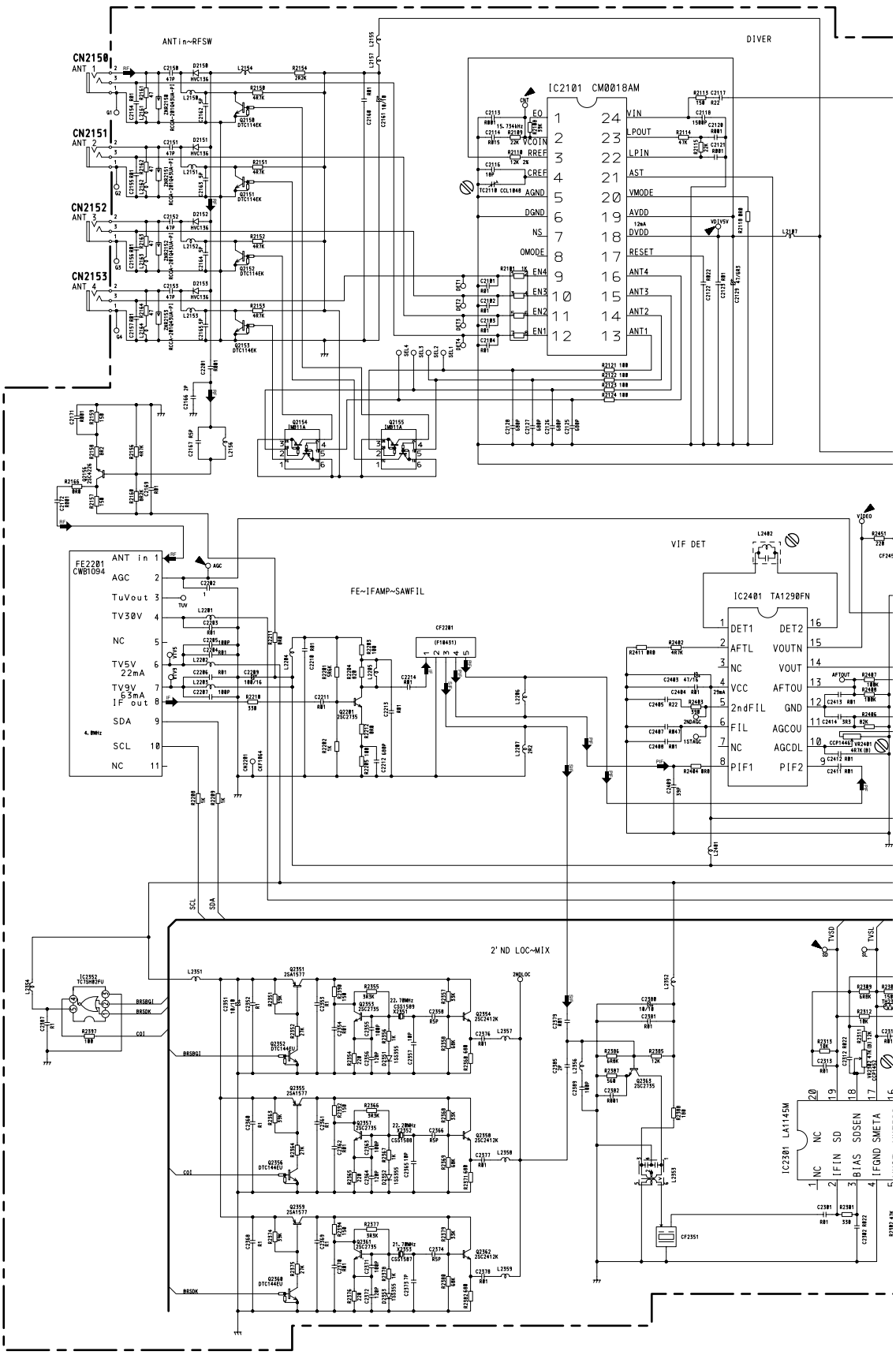

PNS&AUDIO BUFFER
SIF(2'ND) DET
IC2501 LA2120M
NOSEN CONOUT
NOAGC -IN
GATET +IN
HOLD NC
PILOUT NC
VCC COMPIN
HPFADJ PICANI
COMPO GND
IFGND SMETA
MUST MUTEDR
MUTE DETGND
MULEV IFCOUNT
AFOUT VCC
AFCO VOLOUT
IFOUT DETIN
IC2651 TK11819M
COMPIN
COMPO
AGC
AFOUT
AFC
REF
TV30V
VTV30V
4

3.5 TV TUNER UNIT(GUIDE PAGE)(GEX-P6400TVP/EW, GEX-P6450TVP/ES)

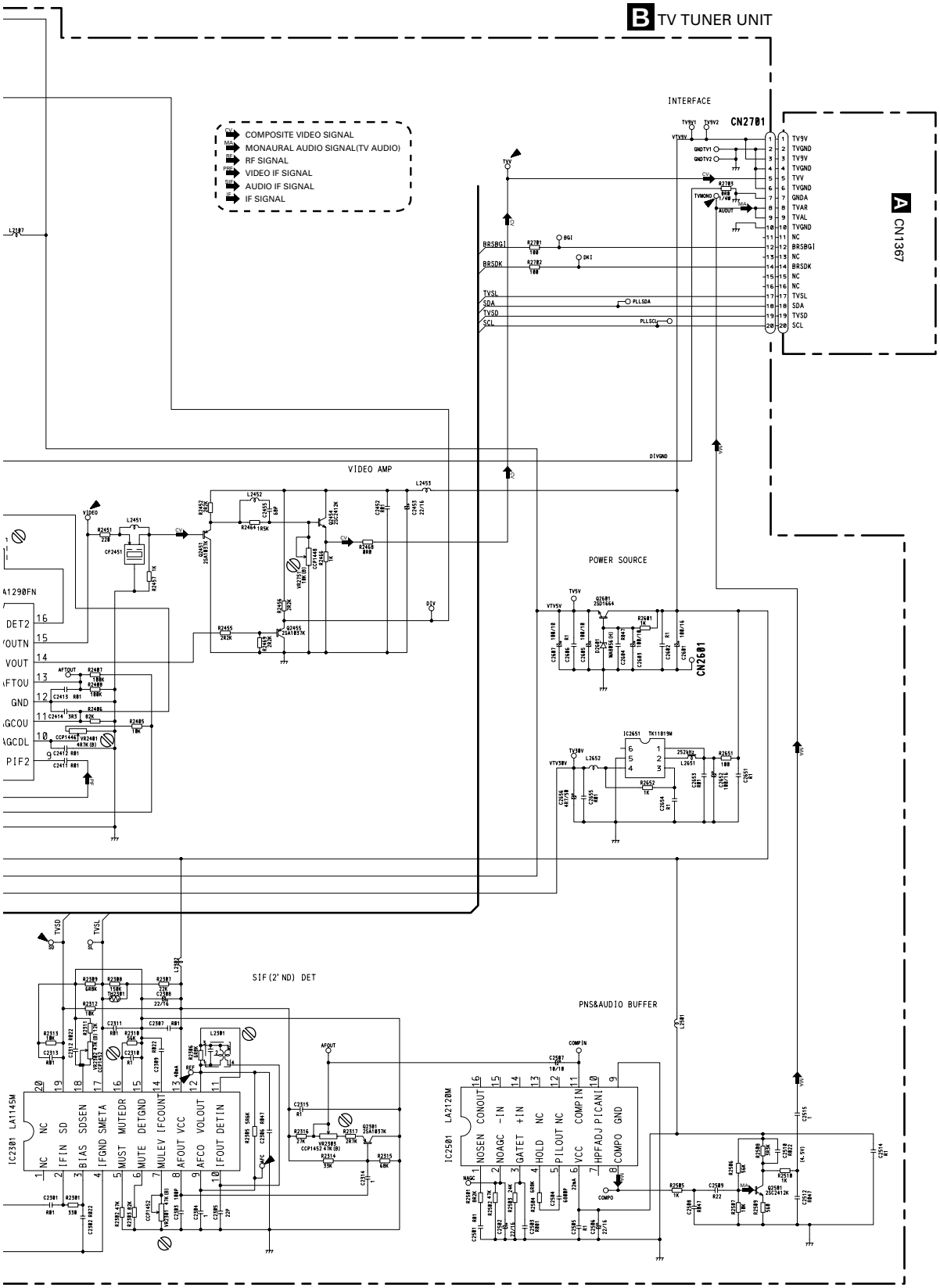
Note: When ordering service parts, be sure to refer to " EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



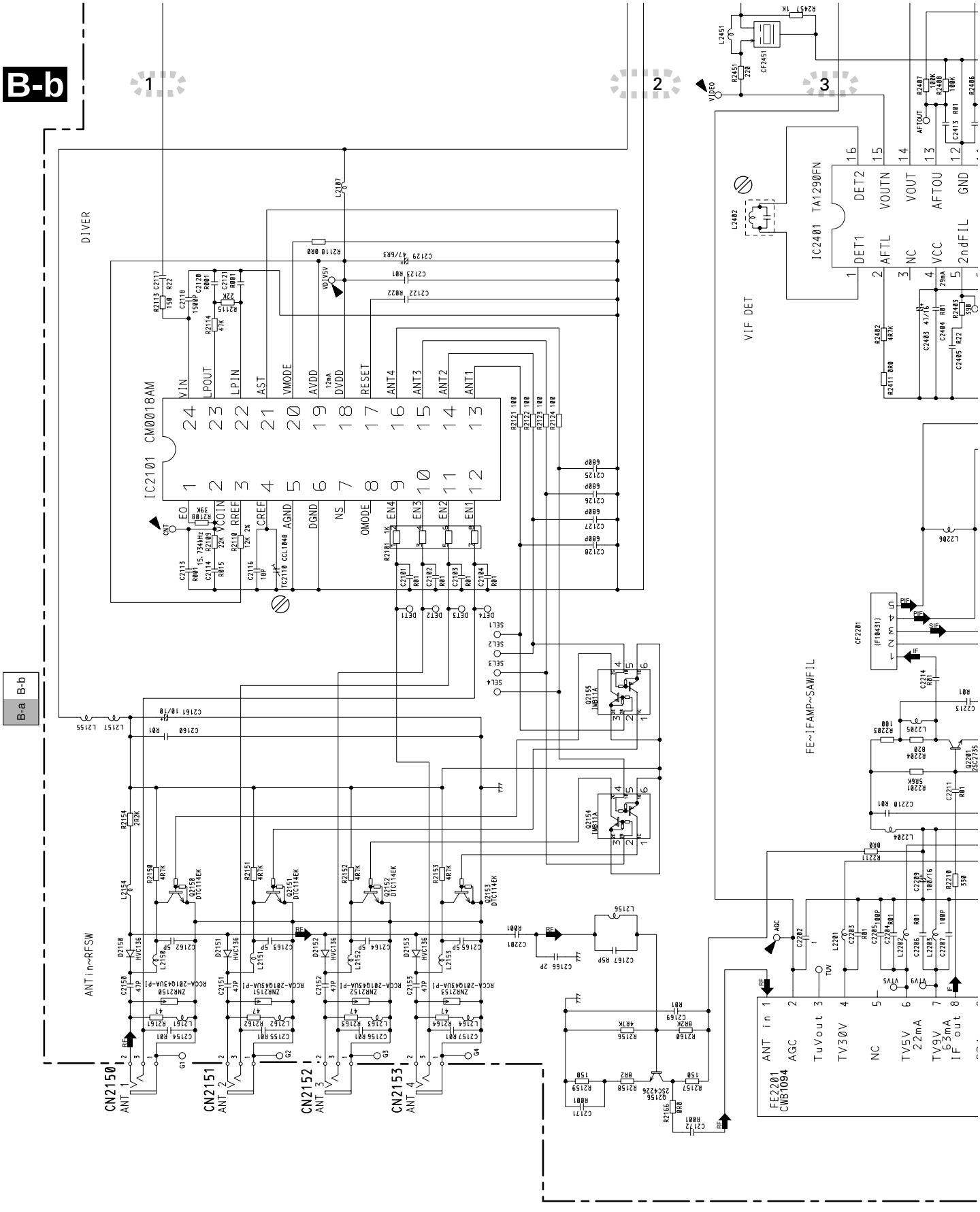
B-a

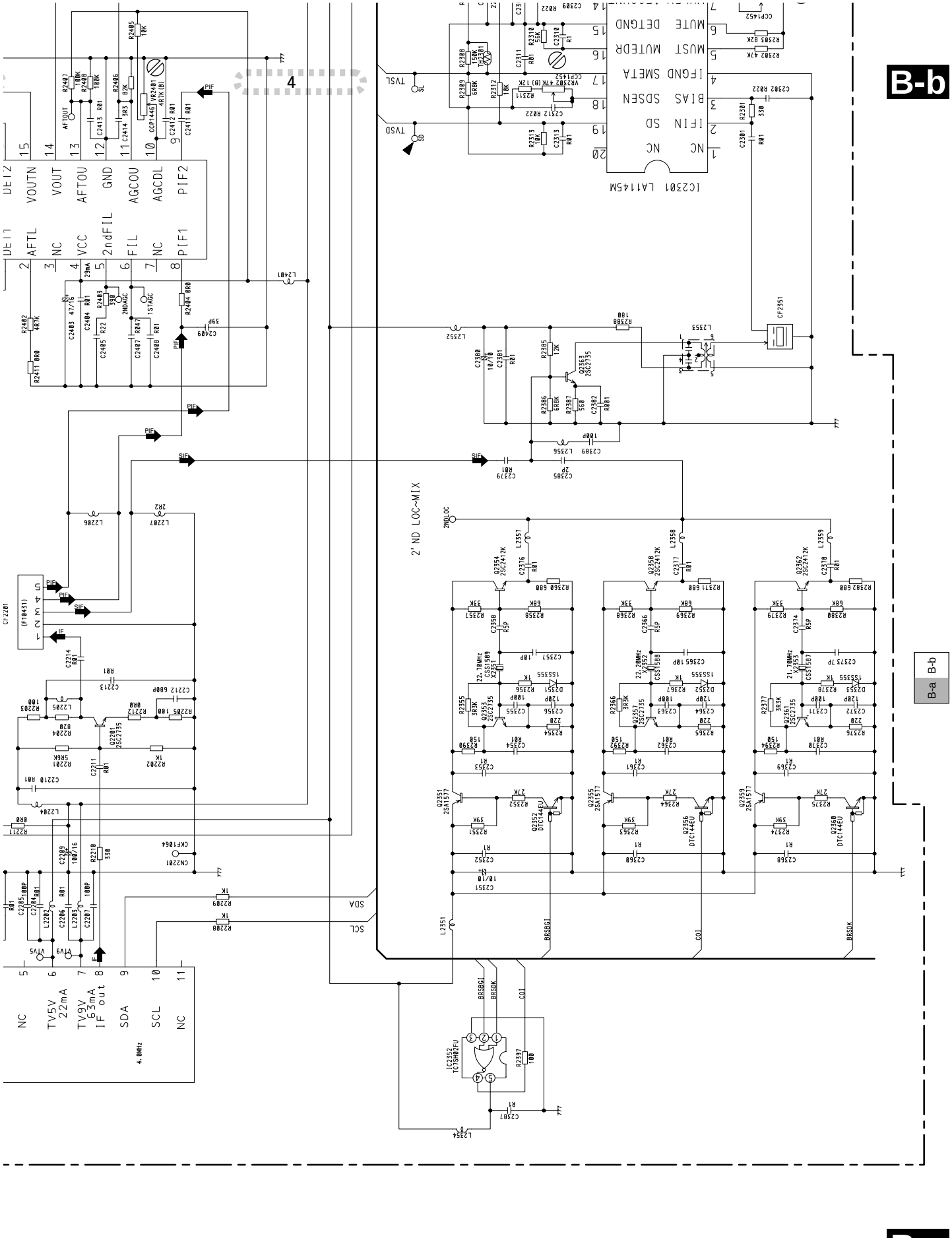


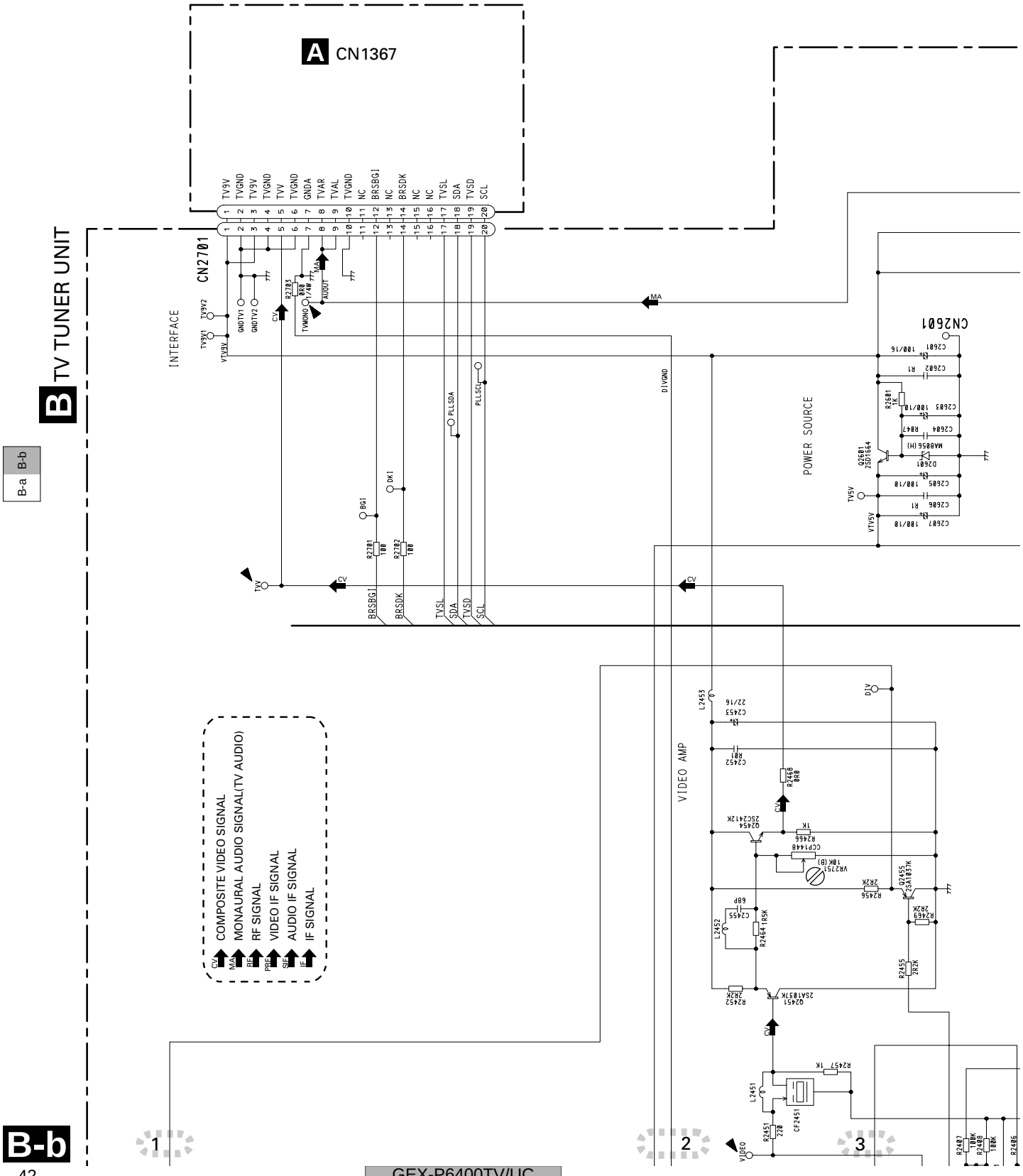
B-b

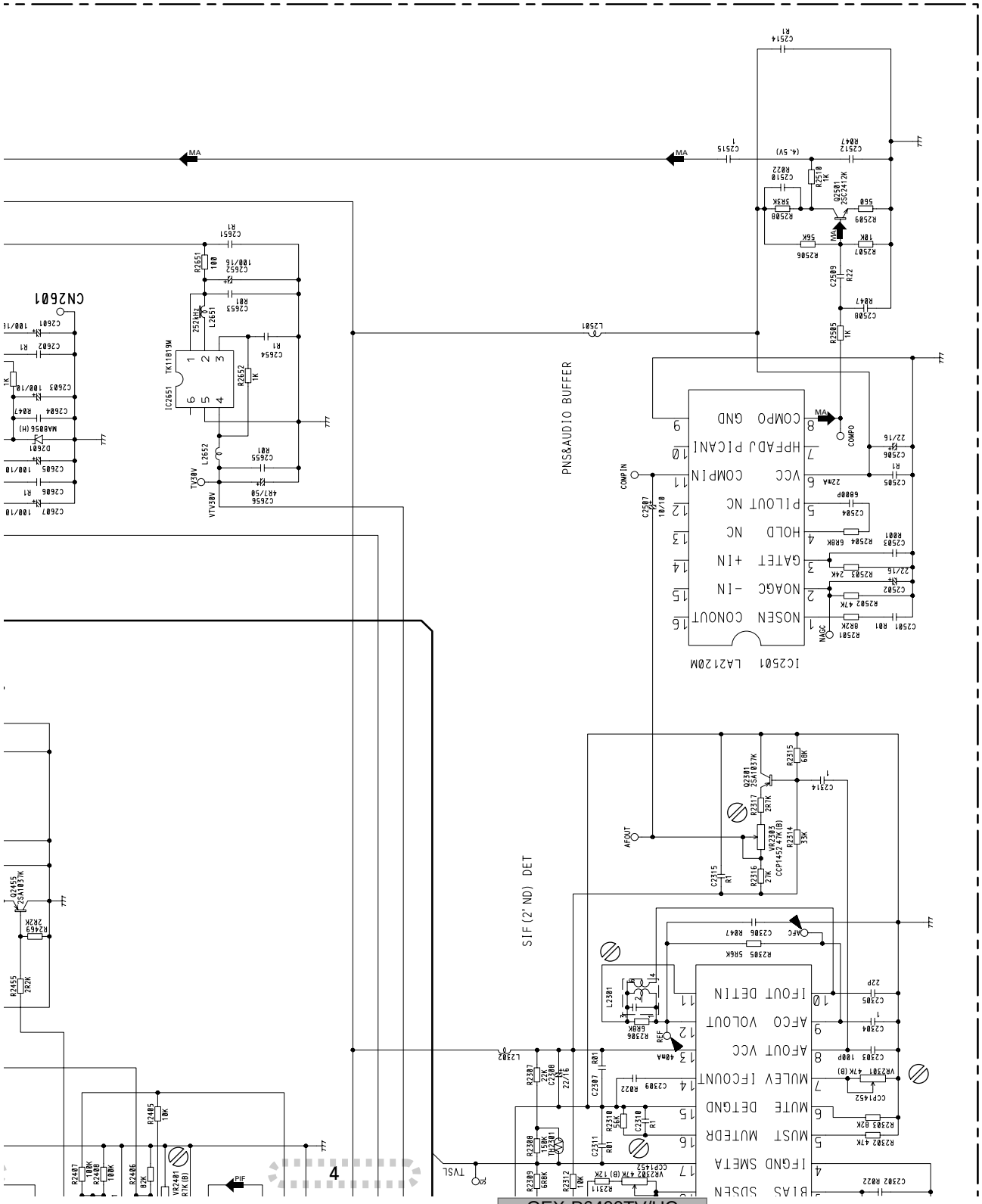

B TV TUNER UNIT
COMPOSITE VIDEO SIGNAL
MONAURAL AUDIO SIGNAL(TV AUDIO)
RF SIGNAL
VIDEO IF SIGNAL
AUDIO IF SIGNAL
IF SIGNAL
INTERFACE
CN2701
A CN1367
TV9V
TVGND
TVV
TVAR
TVAL
BRSBGI
BRSDK
TVSL
SDA
TVSD
SCL
VIDEO AMP
POWER SOURCE
CN2601
SIF(2'ND) DET
PNS&AUDIO BUFFER
IC2301 LA1145M
IC2501 LA2120M

B


B-b
B-a
DIVER
IC2101 CM0018AM
VIN
LPOUT
LPIN
AST
VMODE
AVDD
DVDD
RESET
ANT4
ANT3
ANT2
ANT1
EO
VCOIN
RREF
CREF
AGND
DGND
NS
OMODE
EN4
EN3
EN2
EN1
IC2401 TA1290FN
DET1
DET2
AFTL
VOUTN
NC
VOUT
VCC
AFTOU
2ndFIL
GND
VIF DET
FE~IFAMP~SAWFIL
FE2201
CWB1094
ANT in
AGC
TuVout
TV30V
NC
TV5V
22mA
TV9V
63mA
IF out
ANTin~RFSW
CN2150
CN2151
CN2152
CN2153
ANT 1
ANT 2
ANT 3
ANT 4

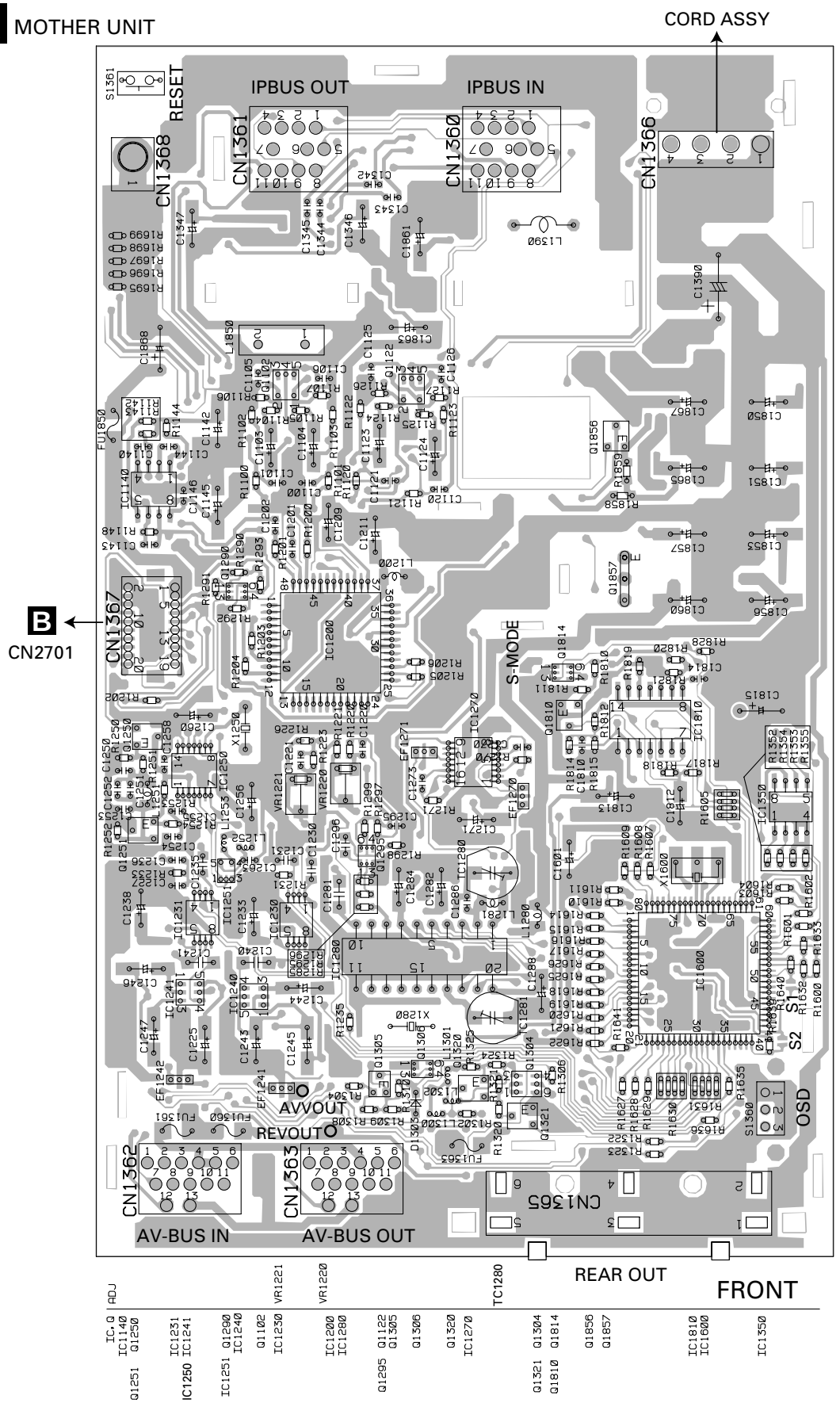

B-b
B-a
2' ND LOC~MIX
IC2301 LA1145M
4
5
6
7
8
A
B
C
D


A CN1367
B TV TUNER UNIT
CN2701
INTERFACE
POWER SOURCE
VIDEO AMP
CN2601
COMPOSITE VIDEO SIGNAL
MONAURAL AUDIO SIGNAL(TV AUDIO)
RF SIGNAL
VIDEO IF SIGNAL
AUDIO IF SIGNAL
IF SIGNAL
B-a
B-b
B-b
1
2
3


PNS&AUDIO BUFFER
SIF(2'ND) DET
IC2501 LA2120M
CN2601
TK11819M
CCP1452
4

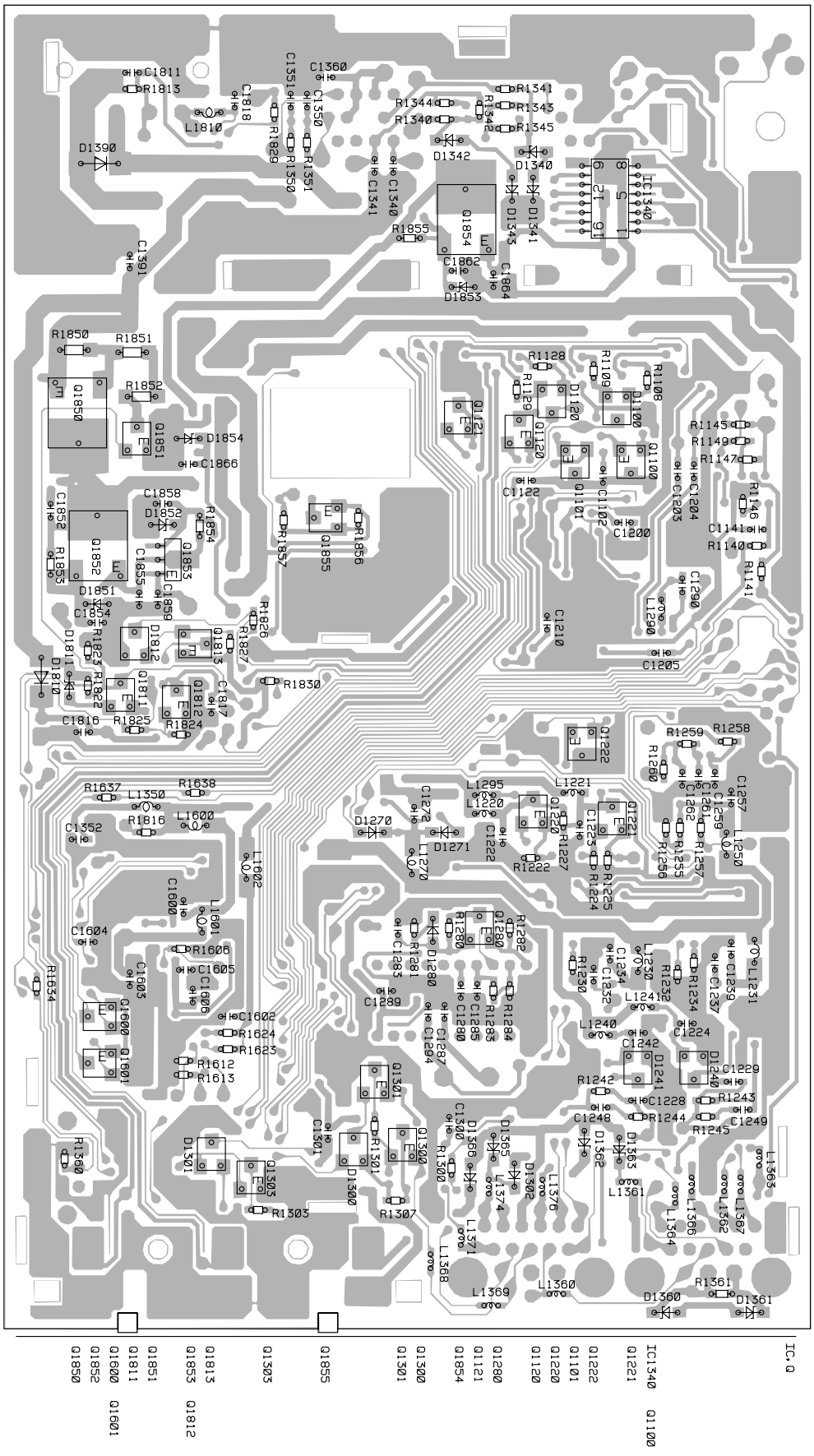
4. PCB CONNECTION DIAGRAM

4.1 MOTHER UNIT



A MOTHER UNIT

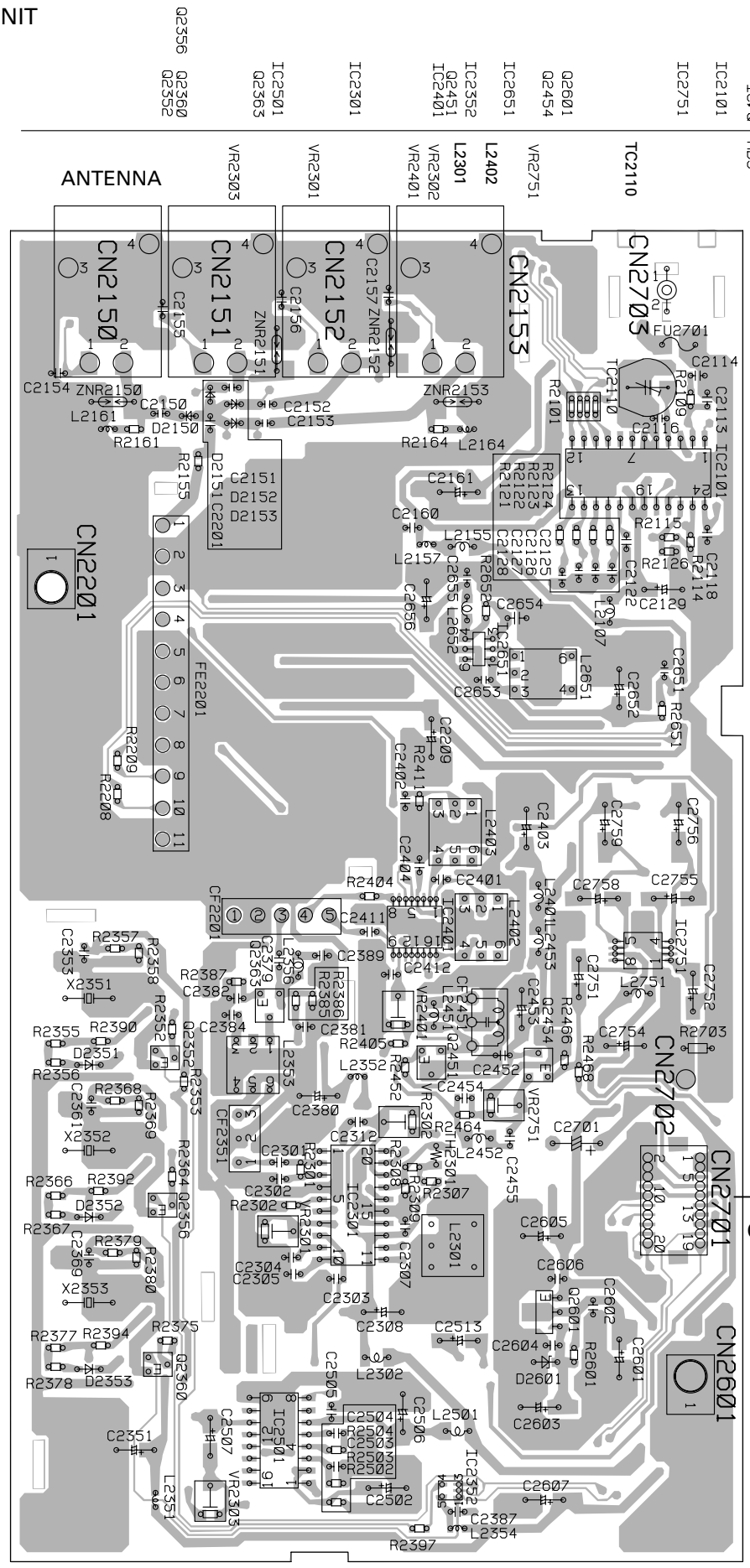
SIDE B



4.2 TV TUNER UNIT

B TV TUNER UNIT

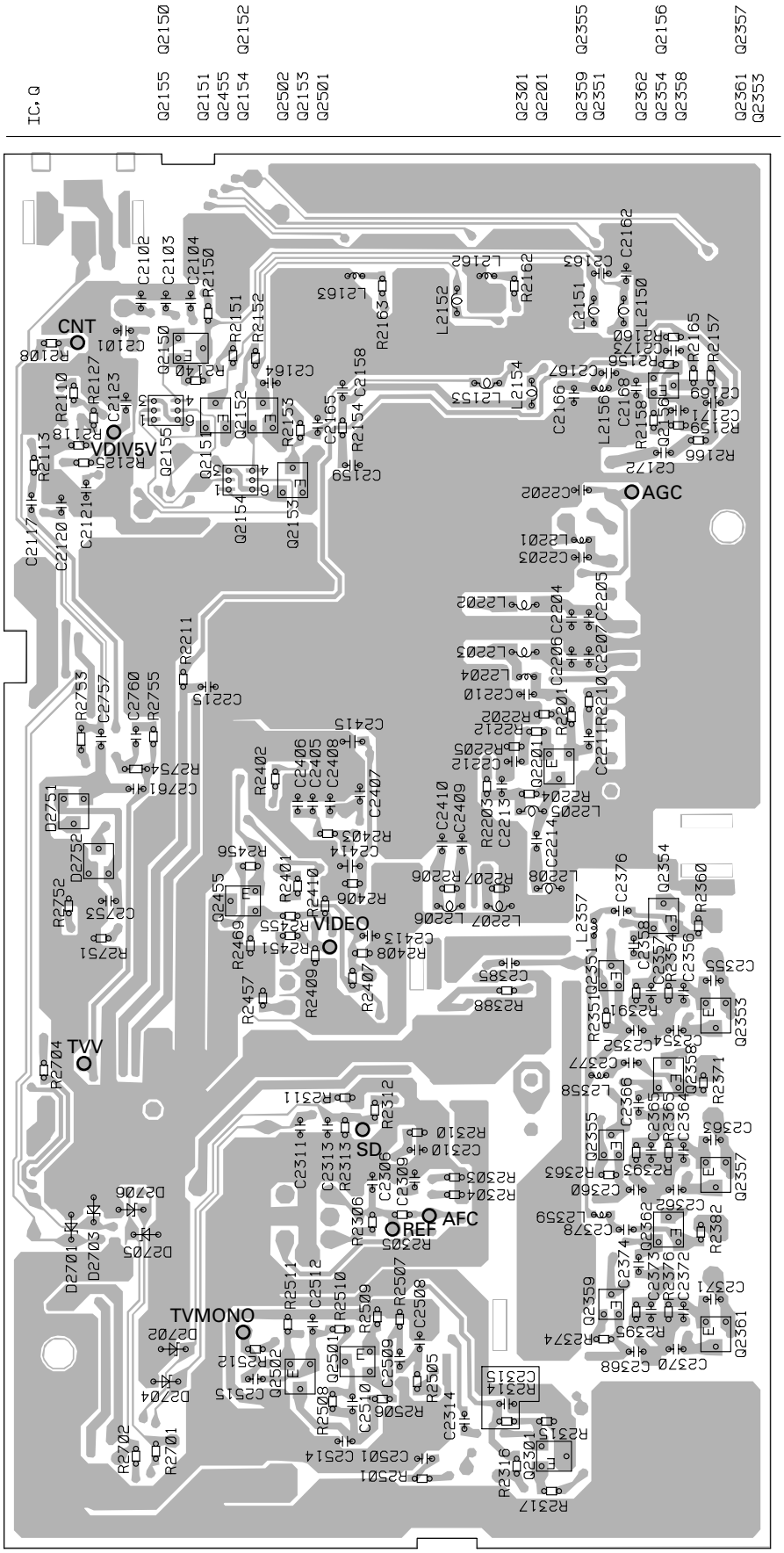
SIDE A



B

B TV TUNER UNIT

SIDE B



5. ELECTRICAL PARTS LIST

NOTE:

- *Parts whose parts numbers are omitted are subject to being not supplied.*
- *The part numbers shown below indicate chip components.*

Chip Resistor

RS1/◯S◯◯◯J,RS1/◯◯S◯◯◯J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

A

Unit Number:CWM8240
(GEX-P6400TV/UC)
:CWM8298
(GEX-P6450TV/ES)
Unit Name:Mother Unit

MISCELLANEOUS

Circuit Symbol and No.	Part Name	Part No.
IC 1140	IC	NJM4558E
IC 1200	IC	CXA2089Q
IC 1230	IC	NJM2235V
IC 1231	IC	NJM2235V
IC 1240	IC	TK15405MI
IC 1241	IC	TK15405MI
IC 1250	IC	NJW1303V
IC 1251	IC	TC7SH08FU
IC 1270	IC	TC74VHC123AFT
IC 1280	IC	M35014-001SP
IC 1340	IC	TA2050F
IC 1350	IC	CA0008AM
IC 1600	IC	PE5300A
IC 1810	IC	PAJ001A
Q 1100	Transistor	2SC2412K
Q 1101	Transistor	2SC2412K
Q 1102	Transistor	FMG12
Q 1120	Transistor	2SC2412K
Q 1121	Transistor	2SC2412K
Q 1122	Transistor	FMG12
Q 1220	Transistor	2SC2412K
Q 1221	Transistor	2SC2412K
Q 1222	Transistor	2SA1037K
Q 1250	Transistor	2SC2412K
Q 1251	Transistor	2SA1037K
Q 1280	Transistor	2SC2412K
Q 1290	Transistor	UMT2N
Q 1295	Transistor	UMZ1N
Q 1303	Transistor	DTC124EK
Q 1304	Transistor	IMD2A
Q 1305	Transistor	2SA1576
Q 1306	Transistor	UMH6N
Q 1320	Transistor	2SA1037K
Q 1321	Transistor	DTC124EK
Q 1600	Transistor	DTA144EK
Q 1601	Transistor	DTA144EK
Q 1810	Transistor	2SC2412K
Q 1811	Transistor	DTC114EK
Q 1850	Transistor	2SA1385-Z
Q 1851	Transistor	DTC114EK
Q 1852	Transistor	2SD1760F5
Q 1853	Transistor	2SD1664
Q 1854	Transistor	2SD1760F5
Q 1855	Transistor	2SA1036K
Q 1856	Transistor	DTC144EK
Q 1857	Transistor	2SD2375
D 1100	Diode	DAP202K
D 1120	Diode	DAP202K
D 1240	Diode	MA153
D 1241	Diode	MA153
D 1270	Diode	1SS355
D 1271	Diode	1SS355
D 1280	Diode	1SS355
D 1301	Diode	DAN202K
D 1302	Diode	1SS355
D 1303	Diode	1SS355
D 1340	Diode	UDZS5R6(B)
D 1341	Diode	UDZS5R6(B)
D 1342	Diode	UDZS5R6(B)
D 1343	Diode	UDZS5R6(B)
D 1360	Diode	HZU2R0(B)
D 1361	Diode	HZU2R0(B)
D 1362	Diode	UDZS12(B)
D 1363	Diode	UDZS12(B)
D 1365	Diode	UDZS12(B)
D 1366	Diode	UDZS12(B)
D 1390	Diode	SC016-2
D 1810	Diode	SC016-2
D 1811	Diode	MA8180(M)
D 1851	Diode	MA8100(L)
D 1852	Diode	UDZS5R6(B)
D 1853	Diode	MA8100(L)
D 1854	Diode	MA8100(L)
L 1200	Inductor	LCKB100K2520
L 1220	Inductor	LCYC100K2125
L 1221	Inductor	LCYC100K2125
L 1230	Inductor	LCKB100K2520
L 1231	Inductor	LCKB100K2520
L 1240	Inductor	LCYC100K2125
L 1241	Inductor	LCYC100K2125
L 1250	Inductor	LCKB100K2520
L 1251	Inductor	LCKA820J2520
L 1252	Inductor	CTF1473
L 1253	Inductor	CTF1473
L 1270	Inductor	LCKB100K2520
L 1280	Inductor	LCKB100K2520
L 1281	Inductor	LCKA390J2520
L 1290	Inductor	LCYC100K2125
L 1295	Inductor	LCYC100K2125
L 1301	Inductor	CTF1473
L 1350	Inductor	CTF1295

Circuit Symbol and No.	Part Name	Part No.
L 1360	Inductor	CTF1379
L 1361	Inductor	CTF1473
L 1362	Inductor	CTF1379
L 1363	Inductor	CTF1379
L 1364	Inductor	CTF1379
L 1366	Inductor	CTF1379
L 1367	Inductor	CTF1379
L 1368	Inductor	CTF1473
L 1369	Inductor	CTF1379
L 1371	Inductor	CTF1473
L 1374	Inductor	CTF1379
L 1376	Inductor	CTF1379
L 1390	Choke Coil 2.4mH	CTH1101
L 1600	Inductor	LCKB150K2520
L 1601	Inductor	LCYC2R2K2125
L 1602	Inductor	LCKB150K2520
L 1850	Choke Coil 7.5mH	CTH1274
TC1280	Trimmer	CCL1048
X 1250	Ceramic Resonator 503kHz	CSS1100
X 1280	Crystal Resonator 14.31818MHz	CSS1593
X 1600	Ceramic Resonator 6.290MHz	CSS1537
S 1360	Slide Switch (OSD)	CSH1051
S 1361	Switch (RESET)	CSG1020
VR1220	Semi-fixed 2.2kΩ(B)	CCP1444
VR1221	Semi-fixed 2.2kΩ(B)	CCP1444
FU1360	Fuse 2A,63V DC	CEK1190
FU1361	Fuse 2A,63V DC	CEK1190
FU1363	Fuse 2A,63V DC	CEK1190
FU1850	Fuse 630mA,63V DC	CEK1210
EF1241	Filter	CTF1580
EF1242	Filter	CTF1580
EF1270	EMI Filter	CCG1067
EF1271	EMI Filter	CCG1067

RESISTORS

Circuit Symbol and No.	Part No.
R 1100	RS1/16S182J
R 1101	RS1/16S182J
R 1102	RS1/16S471J
R 1103	RS1/16S471J
R 1104	RS1/16S821J
R 1105	RS1/16S821J
R 1106	RS1/16S104J
R 1107	RS1/16S104J
R 1108	RS1/16S821J
R 1109	RS1/16S821J
R 1120	RS1/16S182J
R 1121	RS1/16S182J
R 1122	RS1/16S471J
R 1123	RS1/16S471J
R 1124	RS1/16S821J
R 1125	RS1/16S821J
R 1126	RS1/16S104J
R 1127	RS1/16S104J
R 1128	RS1/16S821J
R 1129	RS1/16S821J
R 1140	RS1/16S182J
R 1141	RS1/16S182J
R 1142	RS1/16S103J
R 1143	RS1/16S103J
R 1144	RS1/16S223J
R 1145	RS1/16S103J
R 1146	RS1/16S103J
R 1147	RS1/16S103J
R 1148	RS1/16S153J
R 1149	RS1/16S153J
R 1200	RS1/16S562J
R 1201	RS1/16S562J
R 1202	RS1/16S470J
R 1203	RS1/16S562J
R 1204	RS1/16S562J
R 1205	RS1/16S101J
R 1206	RS1/16S101J
R 1220	RS1/16S102J
R 1221	RS1/16S222J
R 1222	RS1/16S471J
R 1223	RS1/16S102J
R 1224	RS1/16S222J
R 1225	RS1/16S471J
R 1226	RS1/16S102J
R 1230	RS1/16S105J
R 1231	RS1/16S105J
R 1232	RS1/16S105J
R 1234	RS1/16S0R0J
R 1242	RS1/16S680J
R 1243	RS1/16S680J
R 1250	RS1/16S471J
R 1251	RS1/16S821J
R 1253	RS1/16S471J
R 1254	RS1/16S361J
R 1256	RS1/16S473J
R 1257	RS1/16S914J
R 1258	RS1/16S302J
R 1259	RS1/16S1801F
R 1260	RS1/16S3900F
R 1270	RS1/16S911J
R 1271	RS1/16S562J
R 1280	RS1/16S393J
R 1281	RS1/16S203J
R 1282	RS1/16S105J
R 1283	RS1/16S202J
R 1284	RS1/16S472J
R 1285	RS1/16S0R0J
R 1290	RS1/16S102J
R 1291	RS1/16S331J
R 1292	RS1/16S102J
R 1295	RS1/16S101J
R 1296	RS1/16S102J
R 1297	RS1/16S102J
R 1298	RS1/16S104J
R 1299	RS1/16S104J
R 1300	RS1/16S102J
R 1303	RS1/16S102J
R 1304	RS1/16S103J
R 1306	RS1/16S102J
R 1307	RS1/16S0R0J
R 1308	RS1/16S103J
R 1309	RS1/16S472J
R 1310	RS1/16S472J
R 1320	RS1/16S332J
R 1321	RS1/16S473J
R 1323	RS1/16S0R0J
R 1325	RS1/16S0R0J
R 1340	RS1/16S101J
R 1341	RS1/16S101J
R 1342	RS1/16S223J
R 1343	RS1/16S223J
R 1344	RS1/16S102J

Circuit Symbol and No.	Part Name	Part No.
R 1345		RS1/16S102J
R 1350		RS1/16S181J
R 1351		RS1/16S181J
R 1352		RS1/16S102J
R 1353		RS1/16S473J
R 1354		RS1/16S102J
R 1355		RS1/16S473J
R 1361		RS1/10S750J
R 1601		RS1/16S681J
R 1602		RS1/16S681J
R 1603		RS1/16S681J
R 1604		RS1/16S102J
R 1605		RAB4C681J
R 1606		RS1/16S473J
R 1607		RS1/16S681J
R 1608		RS1/16S681J
R 1609		RS1/16S681J
R 1610		RS1/16S473J
R 1611	(GEX-P6450TV/ES)	RS1/16S153J
R 1612		RS1/16S473J
R 1613		RS1/16S473J
R 1614		RS1/16S681J
R 1617		RS1/16S470J
R 1618		RS1/16S470J
R 1620		RS1/16S470J
R 1621		RS1/16S470J
R 1623		RS1/16S103J
R 1624		RS1/16S103J
R 1625		RS1/16S103J
R 1626		RS1/16S103J
R 1629		RS1/16S681J
R 1630		RAB4C681J
R 1631		RAB4C681J
R 1632		RS1/16S473J
R 1633		RS1/16S0R0J
R 1635		RS1/16S681J
R 1636		RS1/16S681J
R 1637		RS1/16S681J
R 1638		RS1/16S681J
R 1639		RS1/16S473J
R 1640		RS1/16S473J
R 1695	(GEX-P6400TV/UC)	RS1/16S0R0J
R 1697	(GEX-P6450TV/ES)	RS1/16S0R0J
R 1810		RS1/16S222J
R 1811		RS1/16S473J
R 1812		RS1/16S101J
R 1814		RS1/16S223J
R 1815		RS1/16S103J
R 1816		RS1/16S104J
R 1817		RS1/16S104J
R 1818		RS1/16S104J
R 1819		RS1/16S104J
R 1821		RS1/16S563J
R 1822		RS1/16S753J
R 1823		RS1/16S363J
R 1829		RS1/16S183J
R 1850		RS1/4S153J
R 1851		RS1/4S301J
R 1852		RS1/4S301J
R 1853		RS1/10S681J
R 1854		RS1/10S681J
R 1855		RS1/10S681J
R 1856		RS1/16S223J
R 1857		RS1/16S182J
R 1858		RS1/10S102J
R 1859		RS1/10S104J

CAPACITORS

Circuit Symbol and No.	Part Name	Part No.
C 1100		CKSRYB222K50
C 1101		CKSRYB222K50
C 1102		CKSRYB104K16
C 1103		CEV100M16
C 1104		CEV100M16
C 1105		CKSRYB222K50
C 1106		CKSRYB222K50
C 1120		CKSRYB222K50
C 1121		CKSRYB222K50
C 1122		CKSRYB104K16
C 1123		CEV100M16
C 1124		CEV100M16
C 1125		CKSRYB222K50
C 1126		CKSRYB222K50
C 1140		CKSRYB222K50
C 1141		CKSRYB222K50
C 1142		CEV101M16
C 1143		CCSRCH101J50
C 1144		CCSRCH101J50
C 1145		CEV101M16
C 1146		CKSRYB104K16
C 1200		CKSRYB105K10
C 1201		CKSRYB105K10
C 1202		CKSRYB105K10
C 1203		CKSRYB105K10
C 1204		CKSRYB105K10
C 1205		CKSRYB105K10
C 1209		CEV100M16
C 1210		CKSRYB103K50
C 1211		CEV220M16
C 1220		CCSRCH5R0C50
C 1221		CCSRCH5R0C50
C 1222		CKSRYB103K50
C 1223		CKSRYB103K50
C 1224		CKSRYB103K50
C 1225		CEV330M10
C 1227		CKSRYB104K16
C 1230		CKSQYB225K10
C 1231		CKSQYB225K10
C 1232		CKSRYB104K16
C 1233		CEV470M6R3
C 1234		CKSRYB103K50
C 1235		CKSQYB225K10
C 1237		CKSRYB104K16
C 1238		CEV470M6R3
C 1239		CKSRYB103K50
C 1240		CKSYF475Z16
C 1241		CKSYF475Z16
C 1242		CKSRYB103K50
C 1243		CEV330M10
C 1244		CEV330M10
C 1245		CEV330M10
C 1246		CEV330M10
C 1247		CEV330M10
C 1250		CCSRCH560J50
C 1251		CCSRCH120J50
C 1252		CCSRCH120J50
C 1253		CCSRCH121J50
C 1254		CCSRCH331J50

Circuit Symbol and No.	Part Name	Part No.
C 1255		CKSRYB105K10
C 1256		CEV101M16
C 1257		CKSRYB103K50
C 1258		CKSRYB105K10
C 1259		CKSRYB153K50
C 1260		CEV4R7M35
C 1261		CCSRCH151J50
C 1262		CCSRCH102J50
C 1263		CKSRYB103K50
C 1270		CKSRYB224K16
C 1271		CEV101M16
C 1272		CKSRYB103K50
C 1273		CCSRCH681J50
C 1281		CKSYF475Z16
C 1282		CEV100M16
C 1283		CKSRYB104K16
C 1284		CEV100M16
C 1285		CKSRYB104K16
C 1286		CCSRCH390J50
C 1287		CCSRCH8R0D50
C 1288		CEV100M16
C 1289		CKSRYB104K16
C 1290		CKSRYB103K50
C 1294		CCSRCH8R0D50
C 1295		CKSRYB103K50
C 1296		CKSQYB225K10
C 1300		CKSRYB104K16
C 1301		CKSRYB104K16
C 1340		CCSRCH471J50
C 1341		CCSRCH471J50
C 1342		CKSRYB105K10
C 1343		CKSRYB105K10
C 1344		CKSRYB105K10
C 1345		CKSRYB105K10
C 1346		CEV100M16
C 1347		CEV220M16
C 1350		CCSRCH102J50
C 1351		CCSRCH102J50
C 1352		CKSRYB104K16
C 1360		CKSRYB103K50
C 1390	3300µF/16V	CCH1150
C 1391		CKSRYF104Z25
C 1600		CKSRYB104K16
C 1601		CEV101M16
C 1602		CKSRYB104K16
C 1603		CKSRYB104K16
C 1604		CKSRYB103K50
C 1605		CKSRYB103K50
C 1606		CKSRYB104K16
C 1810		CKSRYB103K50
C 1812		CEV100M16
C 1813		CEV101M16
C 1814		CKSRYB103K50
C 1815		CEHAT222M16
C 1816		CKSRYB103K50
C 1817		CKSRYB103K50
C 1850	100µF/16V	CCH1228
C 1851	100µF/16V	CCH1228
C 1852		CKSRYB103K50
C 1853	100µF/16V	CCH1228
C 1854		CKSRYB103K50
C 1855		CKSRYB103K50
C 1856	100µF/16V	CCH1228
C 1857	100µF/16V	CCH1228
C 1858		CKSRYB103K50
C 1859		CKSRYB103K50
C 1860	100µF/16V	CCH1228
C 1861	100µF/16V	CCH1228
C 1862		CKSRYB103K50
C 1863	100µF/16V	CCH1228
C 1864		CKSRYB103K50
C 1865	100µF/16V	CCH1228
C 1866		CKSRYF104Z25
C 1867	100µF/16V	CCH1228
C 1868		CEHAT222M16

A

Unit Number:CWM8242 (GEX-P6400TVP/EW)
:CWM8299 (GEX-P6450TVP/ES)
Unit Name:Mother Unit

MISCELLANEOUS

IC 1140	IC	NJM4558E
IC 1200	IC	CXA2089Q
IC 1230	IC	NJM2235V
IC 1231	IC	NJM2235V
IC 1240	IC	TK15405MI
IC 1241	IC	TK15405MI
IC 1250	IC	NJW1303V
IC 1251	IC	TC7SH08FU
IC 1270	IC	TC74VHC123AFT
IC 1280	IC	M35014-001SP
IC 1340	IC	TA2050F
IC 1350	IC	CA0008AM
IC 1600	IC	PE5300A
IC 1810	IC	PAJ001A
Q 1100	Transistor	2SC2412K
Q 1101	Transistor	2SC2412K
Q 1102	Transistor	FMG12
Q 1120	Transistor	2SC2412K
Q 1121	Transistor	2SC2412K
Q 1122	Transistor	FMG12
Q 1220	Transistor	2SC2412K
Q 1221	Transistor	2SC2412K
Q 1222	Transistor	2SA1037K
Q 1250	Transistor	2SC2412K
Q 1251	Transistor	2SA1037K
Q 1280	Transistor	2SC2412K
Q 1290	Transistor	UMT2N
Q 1295	Transistor	UMZ1N
Q 1303	Transistor	DTC124EK
Q 1304	Transistor	IMD2A
Q 1305	Transistor	2SA1576
Q 1306	Transistor	UMH6N
Q 1320	Transistor	2SA1037K
Q 1321	Transistor	DTC124EK
Q 1600	Transistor	DTA144EK
Q 1601	Transistor	DTA144EK
Q 1810	Transistor	2SC2412K
Q 1811	Transistor	DTC114EK
Q 1850	Transistor	2SA1385-Z
Q 1851	Transistor	DTC114EK

Circuit Symbol and No.	Part Name	Part No.
Q 1852	Transistor	2SD1760F5
Q 1853	Transistor	2SD1664
Q 1854	Transistor	2SD1760F5
Q 1855	Transistor	2SA1036K
Q 1856	Transistor	DTC144EK
Q 1857	Transistor	2SD2375
D 1100	Diode	DAP202K
D 1120	Diode	DAP202K
D 1240	Diode	MA153
D 1241	Diode	MA153
D 1270	Diode	1SS355
D 1271	Diode	1SS355
D 1280	Diode	1SS355
D 1301	Diode	DAN202K
D 1302	Diode	1SS355
D 1303	Diode	1SS355
D 1340	Diode	UDZS5R6(B)
D 1341	Diode	UDZS5R6(B)
D 1342	Diode	UDZS5R6(B)
D 1343	Diode	UDZS5R6(B)
D 1360	Diode	HZU2R0(B)
D 1361	Diode	HZU2R0(B)
D 1362	Diode	UDZS12(B)
D 1363	Diode	UDZS12(B)
D 1365	Diode	UDZS12(B)
D 1366	Diode	UDZS12(B)
D 1390	Diode	SC016-2
D 1810	Diode	SC016-2
D 1811	Diode	MA8180(M)
D 1851	Diode	MA8100(L)
D 1852	Diode	UDZS5R6(B)
D 1853	Diode	MA8100(L)
D 1854	Diode	MA8100(L)
L 1200	Inductor	LCKB100K2520
L 1220	Inductor	LCYC100K2125
L 1221	Inductor	LCYC100K2125
L 1230	Inductor	LCKB100K2520
L 1231	Inductor	LCKB100K2520
L 1240	Inductor	LCYC100K2125
L 1241	Inductor	LCYC100K2125
L 1250	Inductor	LCKB100K2520
L 1251	Inductor	LCKA820J2520
L 1252	Inductor	CTF1473
L 1253	Inductor	CTF1473
L 1270	Inductor	LCKB100K2520
L 1280	Inductor	LCKB100K2520
L 1281	Inductor	LCKA390J2520
L 1290	Inductor	LCYC100K2125
L 1295	Inductor	LCYC100K2125
L 1301	Inductor	CTF1473
L 1350	Inductor	CTF1295
L 1360	Inductor	CTF1379
L 1361	Inductor	CTF1473
L 1362	Inductor	CTF1379
L 1363	Inductor	CTF1379
L 1364	Inductor	CTF1379
L 1366	Inductor	CTF1379
L 1367	Inductor	CTF1379
L 1368	Inductor	CTF1473
L 1369	Inductor	CTF1379
L 1371	Inductor	CTF1473
L 1374	Inductor	CTF1379
L 1376	Inductor	CTF1379

Circuit Symbol and No.	Part Name	Part No.
L 1390	Choke Coil 2.4mH	CTH1101
L 1600	Inductor	LCKB150K2520
L 1601	Inductor	LCYC2R2K2125
L 1602	Inductor	LCKB150K2520
L 1850	Choke Coil 7.5mH	CTH1274
TC1280	Trimmer	CCL1048
X 1250	Ceramic Resonator 503kHz	CSS1100
X 1280	Crystal Resonator 17.734475MHz	CSS1594
X 1600	Ceramic Resonator 6.290MHz	CSS1537
S 1360	Slide Switch (OSD)	CSH1051
S 1361	Switch (RESET)	CSG1020
VR1220	Semi-fixed 2.2kΩ(B)	CCP1444
VR1221	Semi-fixed 2.2kΩ(B)	CCP1444
FU1360	Fuse 2A,63V DC	CEK1190
FU1361	Fuse 2A,63V DC	CEK1190
FU1363	Fuse 2A,63V DC	CEK1190
FU1850	Fuse 630mA,63V DC	CEK1210
EF1241	Filter	CTF1580
EF1242	Filter	CTF1580
EF1270	EMI Filter	CCG1067
EF1271	EMI Filter	CCG1067

RESISTORS

R 1100	RS1/16S182J
R 1101	RS1/16S182J
R 1102	RS1/16S471J
R 1103	RS1/16S471J
R 1104	RS1/16S821J
R 1105	RS1/16S821J
R 1106	RS1/16S104J
R 1107	RS1/16S104J
R 1108	RS1/16S821J
R 1109	RS1/16S821J
R 1120	RS1/16S182J
R 1121	RS1/16S182J
R 1122	RS1/16S471J
R 1123	RS1/16S471J
R 1124	RS1/16S821J
R 1125	RS1/16S821J
R 1126	RS1/16S104J
R 1127	RS1/16S104J
R 1128	RS1/16S821J
R 1129	RS1/16S821J
R 1140	RS1/16S182J
R 1141	RS1/16S182J
R 1142	RS1/16S103J
R 1143	RS1/16S103J
R 1144	RS1/16S223J
R 1145	RS1/16S103J
R 1146	RS1/16S103J
R 1147	RS1/16S103J
R 1148	RS1/16S153J
R 1149	RS1/16S153J
R 1200	RS1/16S562J
R 1201	RS1/16S562J
R 1202	RS1/16S470J
R 1203	RS1/16S562J
R 1204	RS1/16S562J
R 1205	RS1/16S101J
R 1206	RS1/16S101J
R 1220	RS1/16S102J
R 1221	RS1/16S222J
R 1222	RS1/16S471J

Circuit Symbol and No.	Part Name	Part No.
R 1223		RS1/16S102J
R 1224		RS1/16S222J
R 1225		RS1/16S471J
R 1226		RS1/16S102J
R 1230		RS1/16S105J
R 1231		RS1/16S105J
R 1232		RS1/16S105J
R 1234		RS1/16S0R0J
R 1242		RS1/16S680J
R 1243		RS1/16S680J
R 1250		RS1/16S471J
R 1251		RS1/16S821J
R 1253		RS1/16S471J
R 1254		RS1/16S361J
R 1255		RS1/16S473J
R 1257		RS1/16S914J
R 1258		RS1/16S302J
R 1259		RS1/16S2001F
R 1260		RS1/16S3600F
R 1270		RS1/16S911J
R 1271		RS1/16S562J
R 1280		RS1/16S393J
R 1281		RS1/16S203J
R 1282		RS1/16S105J
R 1283		RS1/16S202J
R 1284		RS1/16S472J
R 1285		RS1/16S0R0J
R 1290		RS1/16S102J
R 1291		RS1/16S331J
R 1292		RS1/16S102J
R 1295		RS1/16S101J
R 1296		RS1/16S102J
R 1297		RS1/16S102J
R 1298		RS1/16S104J
R 1299		RS1/16S104J
R 1300		RS1/16S102J
R 1303		RS1/16S102J
R 1304		RS1/16S103J
R 1306		RS1/16S102J
R 1307		RS1/16S0R0J
R 1308		RS1/16S103J
R 1309		RS1/16S472J
R 1310		RS1/16S472J
R 1320		RS1/16S332J
R 1321		RS1/16S473J
R 1323		RS1/16S0R0J
R 1325		RS1/16S0R0J
R 1340		RS1/16S101J
R 1341		RS1/16S101J
R 1342		RS1/16S223J
R 1343		RS1/16S223J
R 1344		RS1/16S102J
R 1345		RS1/16S102J
R 1350		RS1/16S181J
R 1351		RS1/16S181J
R 1352		RS1/16S102J
R 1353		RS1/16S473J
R 1354		RS1/16S102J
R 1355		RS1/16S473J
R 1361		RS1/10S750J
R 1601		RS1/16S681J
R 1602		RS1/16S681J
R 1603		RS1/16S681J
R 1604		RS1/16S102J

Circuit Symbol and No.	Part Name	Part No.
R 1605		RAB4C681J
R 1606		RS1/16S473J
R 1607		RS1/16S681J
R 1608		RS1/16S681J
R 1609		RS1/16S681J
R 1610	(GEX-P6450TVP/ES)	RS1/16S153J
R 1611		RS1/16S473J
R 1612		RS1/16S473J
R 1613		RS1/16S473J
R 1614		RS1/16S681J
R 1617		RS1/16S470J
R 1618		RS1/16S470J
R 1620		RS1/16S470J
R 1621		RS1/16S470J
R 1623		RS1/16S103J
R 1624		RS1/16S103J
R 1625		RS1/16S103J
R 1626		RS1/16S103J
R 1627		RS1/16S681J
R 1628		RS1/16S681J
R 1629		RS1/16S681J
R 1630		RAB4C681J
R 1631		RAB4C681J
R 1632		RS1/16S473J
R 1633		RS1/16S0R0J
R 1635		RS1/16S681J
R 1636		RS1/16S681J
R 1637		RS1/16S681J
R 1638		RS1/16S681J
R 1639		RS1/16S473J
R 1640		RS1/16S473J
R 1696	(GEX-P6400TVP/EW)	RS1/16S0R0J
R 1698	(GEX-P6450TVP/ES)	RS1/16S0R0J
R 1810		RS1/16S222J
R 1811		RS1/16S473J
R 1812		RS1/16S101J
R 1814		RS1/16S223J
R 1815		RS1/16S103J
R 1816		RS1/16S104J
R 1817		RS1/16S104J
R 1818		RS1/16S104J
R 1819		RS1/16S104J
R 1821		RS1/16S563J
R 1822		RS1/16S753J
R 1823		RS1/16S363J
R 1829		RS1/16S183J
R 1850		RS1/4S153J
R 1851		RS1/4S301J
R 1852		RS1/4S301J
R 1853		RS1/10S681J
R 1854		RS1/10S681J
R 1855		RS1/10S681J
R 1856		RS1/16S223J
R 1857		RS1/16S182J
R 1858		RS1/10S102J
R 1859		RS1/10S104J

CAPACITORS

C 1100		CKSRYB222K50
C 1101		CKSRYB222K50
C 1102		CKSRYB104K16
C 1103		CEV100M16
C 1104		CEV100M16

Circuit Symbol and No.	Part Name	Part No.
C 1105		CKSRYB222K50
C 1106		CKSRYB222K50
C 1120		CKSRYB222K50
C 1121		CKSRYB222K50
C 1122		CKSRYB104K16
C 1123		CEV100M16
C 1124		CEV100M16
C 1125		CKSRYB222K50
C 1126		CKSRYB222K50
C 1140		CKSRYB222K50
C 1141		CKSRYB222K50
C 1142		CEV101M16
C 1143		CCSRCH101J50
C 1144		CCSRCH101J50
C 1145		CEV101M16
C 1146		CKSRYB104K16
C 1200		CKSRYB105K10
C 1201		CKSRYB105K10
C 1202		CKSRYB105K10
C 1203		CKSRYB105K10
C 1204		CKSRYB105K10
C 1205		CKSRYB105K10
C 1209		CEV100M16
C 1210		CKSRYB103K50
C 1211		CEV220M16
C 1220		CCSRCH5R0C50
C 1221		CCSRCH5R0C50
C 1222		CKSRYB103K50
C 1223		CKSRYB103K50
C 1224		CKSRYB103K50
C 1225		CEV330M10
C 1227		CKSRYB104K16
C 1230		CKSQYB225K10
C 1231		CKSQYB225K10
C 1232		CKSRYB104K16
C 1233		CEV470M6R3
C 1234		CKSRYB103K50
C 1235		CKSQYB225K10
C 1237		CKSRYB104K16
C 1238		CEV470M6R3
C 1239		CKSRYB103K50
C 1240		CKSYF475Z16
C 1241		CKSYF475Z16
C 1242		CKSRYB103K50
C 1243		CEV330M10
C 1244		CEV330M10
C 1245		CEV330M10
C 1246		CEV330M10
C 1247		CEV330M10
C 1250		CCSRCH560J50
C 1251		CCSRCH150J50
C 1253		CCSRCH121J50
C 1254		CCSRCH331J50
C 1255		CKSRYB105K10
C 1256		CEV101M16
C 1257		CKSRYB103K50
C 1258		CKSRYB105K10
C 1259		CKSRYB153K50
C 1260		CEV4R7M35
C 1261		CCSRCH151J50
C 1262		CCSRCH102J50
C 1263		CKSRYB103K50
C 1270		CKSRYB224K16
C 1271		CEV101M16
C 1272		CKSRYB103K50
C 1273		CCSRCH681J50
C 1281		CKSYF475Z16
C 1282		CEV100M16
C 1283		CKSRYB104K16
C 1284		CEV100M16
C 1285		CKSRYB104K16
C 1286		CCSRCH390J50
C 1287		CCSRCH5R0C50
C 1288		CEV100M16
C 1289		CKSRYB104K16
C 1290		CKSRYB103K50
C 1294		CCSRCH9R0D50
C 1295		CKSRYB103K50
C 1296		CKSQYB225K10
C 1300		CKSRYB104K16
C 1301		CKSRYB104K16
C 1340		CCSRCH471J50
C 1341		CCSRCH471J50
C 1342		CKSRYB105K10
C 1343		CKSRYB105K10
C 1344		CKSRYB105K10
C 1345		CKSRYB105K10
C 1346		CEV100M16
C 1347		CEV220M16
C 1350		CCSRCH102J50
C 1351		CCSRCH102J50
C 1352		CKSRYB104K16
C 1360		CKSRYB103K50
C 1390	3300µF/16V	CCH1150
C 1391		CKSRYF104Z25
C 1600		CKSRYB104K16
C 1601		CEV101M16
C 1602		CKSRYB104K16
C 1603		CKSRYB104K16
C 1604		CKSRYB103K50
C 1605		CKSRYB103K50
C 1606		CKSRYB104K16
C 1810		CKSRYB103K50
C 1812		CEV100M16
C 1813		CEV101M16
C 1814		CKSRYB103K50
C 1815		CEHAT222M16
C 1816		CKSRYB103K50
C 1817		CKSRYB103K50
C 1850	100µF/16V	CCH1228
C 1851	100µF/16V	CCH1228
C 1852		CKSRYB103K50
C 1853	100µF/16V	CCH1228
C 1854		CKSRYB103K50
C 1855		CKSRYB103K50
C 1856	100µF/16V	CCH1228
C 1857	100µF/16V	CCH1228
C 1858		CKSRYB103K50
C 1859		CKSRYB103K50
C 1860	100µF/16V	CCH1228
C 1861	100µF/16V	CCH1228
C 1862		CKSRYB103K50
C 1863	100µF/16V	CCH1228
C 1864		CKSRYB103K50
C 1865	100µF/16V	CCH1228
C 1866		CKSRYF104Z25
C 1867	100µF/16V	CCH1228

Circuit Symbol and No.	Part Name	Part No.
C 1868		CEHAT222M16

B
Unit Number:CWM8241 (GEX-P6400TV/UC, GEX-P6450TV/ES) Unit Name:TV TUNER UNIT

MISCELLANEOUS

IC 2101	IC	CM0018AM
IC 2301	IC	LA1145M
IC 2401	IC	TA1290FN
IC 2501	IC	LA2120M
IC 2651	IC	TK11819M
Q 2150	Transistor	DTC114EK
Q 2151	Transistor	DTC114EK
Q 2152	Transistor	DTC114EK
Q 2153	Transistor	DTC114EK
Q 2154	Transistor	IMB11A
Q 2155	Transistor	IMB11A
Q 2156	Transistor	2SC4226
Q 2201	Transistor	2SC2735
Q 2301	Transistor	2SA1037K
Q 2353	Transistor	2SC2735
Q 2354	Transistor	2SC2412K
Q 2363	Transistor	2SC2735
Q 2451	Transistor	2SA1037K
Q 2454	Transistor	2SC2412K
Q 2455	Transistor	2SA1037K
Q 2501	Transistor	2SC2412K
Q 2601	Transistor	2SD1664
D 2150	Diode	HVC136
D 2151	Diode	HVC136
D 2152	Diode	HVC136
D 2153	Diode	HVC136
D 2351	Diode	1SS355
D 2601	Diode	MA8056(H)
ZNR2150	Surge Protector	RCCA-201Q43UA-PI
ZNR2151	Surge Protector	RCCA-201Q43UA-PI
ZNR2152	Surge Protector	RCCA-201Q43UA-PI
ZNR2153	Surge Protector	RCCA-201Q43UA-PI
L 2107	Inductor	LCKA150J2520
L 2150	Inductor	LCTC1R0K2125
L 2151	Inductor	LCTC1R0K2125
L 2152	Inductor	LCTC1R0K2125
L 2153	Inductor	LCTC1R0K2125
L 2154	Inductor	LCTC1R0K2125
L 2155	Inductor	LCKA150J2520
L 2156	Inductor	LCYB12NJ1608
L 2157	Inductor	CTF1470
L 2161	Inductor	LCYB15NJ1608
L 2162	Inductor	LCYB15NJ1608
L 2163	Inductor	LCYB15NJ1608
L 2164	Inductor	LCYB15NJ1608
L 2201	Inductor	CTF1470
L 2202	Inductor	LCTA2R2J2520
L 2203	Inductor	LCTA2R2J2520
L 2204	Inductor	CTF1470
L 2205	Inductor	LCTC1R5K2125
L 2206	Inductor	LCTC1R5K2125
L 2207	Inductor	LCTC1R5K2125
L 2301	Coil	CTC1029
L 2302	Inductor	LCKA150J2520
L 2351	Inductor	CTF1379
L 2352	Inductor	CTF1379
L 2353	Coil	CTE1066
L 2356	Inductor	LCTC2R2K2125
L 2357	Inductor	CTF1379
L 2401	Inductor	LCTA2R2J2520
L 2402	Coil	CTE1148
L 2451	Inductor	LCKA150J2520
L 2452	Inductor	LCKA150J2520
L 2453	Inductor	LCKA150J2520
L 2501	Inductor	LCKA150J2520
L 2651	Transformer	CTX1053
L 2652	Inductor	LCTC220K2125
TC2110	Trimmer	CCL1048
TH2301	Thermistor	TN20-3U473K
CF2201	SAW Filter	CTF1567
CF2351	Filter	CTF1057
CF2451	LPF	CTF1044
X 2351	Crystal Resonator 30.55MHz	CSS1590
VR2301	Semi-fixed 47kΩ(B)	CCP1452
VR2302	Semi-fixed 47kΩ(B)	CCP1452
VR2303	Semi-fixed 47kΩ(B)	CCP1452
VR2401	Semi-fixed 4.7kΩ(B)	CCP1446
VR2751	Semi-fixed 10kΩ(B)	CCP1448
FE2201	Front End	CWB1093

RESISTORS

R 2101		RAB4C102J
R 2108		RS1/16S393J
R 2109		RS1/16S223J
R 2110		RS1/16S1202F
R 2113		RS1/16S151J
R 2114		RS1/16S473J
R 2115		RS1/16S223J
R 2121		RS1/16S101J
R 2122		RS1/16S101J
R 2123		RS1/16S101J
R 2124		RS1/16S101J
R 2150		RS1/16S472J
R 2151		RS1/16S472J
R 2152		RS1/16S472J
R 2153		RS1/16S472J
R 2154		RS1/16S222J
R 2156		RS1/16S472J
R 2157		RS1/16S151J
R 2158		RS1/16S150J
R 2159		RS1/16S151J
R 2160		RS1/16S822J
R 2161		RS1/16S470J
R 2162		RS1/16S470J
R 2163		RS1/16S470J
R 2164		RS1/16S470J
R 2166		RS1/16S0R0J
R 2201		RS1/16S562J
R 2202		RS1/16S102J
R 2203		RS1/16S101J
R 2204		RS1/16S681J
R 2205		RS1/16S101J
R 2206		RS1/16S102J
R 2207		RS1/16S102J
R 2208		RS1/16S102J
R 2209		RS1/16S102J

Circuit Symbol and No.	Part Name	Part No.
R 2210		RS1/16S331J
R 2211		RS1/16S0R0J
R 2212		RS1/16S0R0J
R 2301		RS1/16S331J
R 2302		RS1/16S473J
R 2303		RS1/16S823J
R 2305		RS1/16S562J
R 2306		RS1/16S682J
R 2307		RS1/16S223J
R 2308		RS1/16S154J
R 2309		RS1/16S682J
R 2310		RS1/16S563J
R 2311		RS1/16S822J
R 2312		RS1/16S103J
R 2313		RS1/16S103J
R 2314		RS1/16S333J
R 2315		RS1/16S683J
R 2316		RS1/16S273J
R 2317		RS1/16S272J
R 2353		RS1/16S0R0J
R 2354		RS1/16S181J
R 2355		RS1/16S222J
R 2356		RS1/16S102J
R 2357		RS1/16S333J
R 2358		RS1/16S683J
R 2360		RS1/16S681J
R 2385		RS1/16S123J
R 2386		RS1/16S682J
R 2387		RS1/16S561J
R 2388		RS1/16S181J
R 2390		RS1/16S331J
R 2402		RS1/16S472J
R 2403		RS1/16S391J
R 2404		RS1/16S0R0J
R 2405		RS1/16S103J
R 2406		RS1/16S913J
R 2407		RS1/16S104J
R 2408		RS1/16S104J
R 2411		RS1/16S0R0J
R 2451		RS1/16S331J
R 2452		RS1/16S222J
R 2455		RS1/16S222J
R 2456		RS1/16S222J
R 2457		RS1/16S102J
R 2464		RS1/16S152J
R 2466		RS1/16S102J
R 2468		RS1/16S0R0J
R 2469		RS1/16S222J
R 2501		RS1/16S822J
R 2502		RS1/16S473J
R 2503		RS1/16S243J
R 2504		RS1/16S682J
R 2505		RS1/16S102J
R 2506		RS1/16S563J
R 2507		RS1/16S103J
R 2508		RS1/16S332J
R 2509		RS1/16S561J
R 2510		RS1/16S102J
R 2601		RS1/16S102J
R 2651		RS1/16S101J
R 2652		RS1/16S102J
R 2703		RS1/4S0R0J

CAPACITORS

Circuit Symbol and No.	Part Name	Part No.
C 2101		CKSRYB103K50
C 2102		CKSRYB103K50
C 2103		CKSRYB103K50
C 2104		CKSRYB103K50
C 2113		CKSRYB102K50
C 2114		CKSRYB153K50
C 2116		CCSRTH180J50
C 2117		CKSRYB224K16
C 2118		CKSRYB152K50
C 2120		CKSRYB102K50
C 2121		CKSRYB102K50
C 2122		CKSRYB223K50
C 2123		CKSRYB103K50
C 2125		CCSRCH681J50
C 2126		CCSRCH681J50
C 2127		CCSRCH681J50
C 2128		CCSRCH681J50
C 2129		CEV470M6R3
C 2150		CCSRCH470J50
C 2151		CCSRCH470J50
C 2152		CCSRCH470J50
C 2153		CCSRCH470J50
C 2154		CKSRYB103K50
C 2155		CKSRYB103K50
C 2156		CKSRYB103K50
C 2157		CKSRYB103K50
C 2160		CKSRYB103K50
C 2161		CEV100M10
C 2162		CCSRCH5R0D50
C 2163		CCSRCH5R0D50
C 2164		CCSRCH5R0D50
C 2165		CCSRCH5R0D50
C 2166		CCSRCK2R0C50
C 2167		CCSRCKR50C50
C 2169		CKSRYB103K50
C 2171		CKSRYB102K50
C 2172		CKSRYB102K50
C 2201		CKSRYB102K50
C 2202		CKSRYB105K10
C 2203		CKSRYB103K50
C 2204		CKSRYB103K50
C 2205		CCSRCH101J50
C 2206		CKSRYB103K50
C 2207		CCSRCH101J50
C 2209		CEV101M16
C 2210		CKSRYB103K50
C 2211		CKSRYB103K50
C 2212		CCSRCH471J50
C 2213		CKSRYB103K50
C 2214		CKSRYB103K50
C 2301		CKSRYB103K50
C 2302		CKSRYB223K50
C 2303		CCSRCH101J50
C 2304		CKSRYB105K10
C 2305		CCSRCH220J50
C 2306		CKSRYB473K50
C 2307		CKSRYB103K50
C 2308		CEV220M16
C 2309		CKSRYB223K50
C 2310		CKSRYB104K16
C 2311		CKSRYB103K50
C 2312		CKSRYB223K50
C 2313		CKSRYB103K50

Circuit Symbol and No.	Part Name	Part No.
C 2314		CKSRYB105K10
C 2315		CKSRYB104K16
C 2351		CEV100M10
C 2352		CKSRYB104K16
C 2353		CKSRYB104K16
C 2354		CKSRYB103K50
C 2355		CCSRCH560J50
C 2356		CCSRCH121J50
C 2357		CCSRCH7R0D50
C 2358		CCSRCKR50C50
C 2376		CKSRYB103K50
C 2379		CKSRYB103K50
C 2380		CEV100M10
C 2381		CKSRYB103K50
C 2382		CKSRYB102K50
C 2385		CCSRCK2R0C50
C 2389		CCSRCH101J50
C 2403		CEV470M16
C 2404		CKSRYB103K50
C 2405		CKSRYB224K16
C 2407		CKSRYB473K50
C 2408		CKSRYB103K50
C 2411		CKSRYB103K50
C 2412		CKSRYB103K50
C 2413		CKSRYB103K50
C 2414		CKSQYB335K6R3
C 2452		CKSRYB103K50
C 2453		CEV220M16
C 2455		CCSRCH101J50
C 2501		CKSRYB103K50
C 2502		CEV220M16
C 2503		CKSRYB102K50
C 2504		CKSRYB682K50
C 2505		CKSRYB104K16
C 2506		CEV220M16
C 2507		CEV100M10
C 2508		CKSRYB473K50
C 2509		CKSRYB224K16
C 2510		CKSRYB223K50
C 2512		CKSRYB473K50
C 2514		CKSRYB104K16
C 2515		CKSRYB105K10
C 2601		CEV101M16
C 2602		CKSRYB104K16
C 2603		CEV101M10
C 2604		CKSRYB473K50
C 2605		CEV101M10
C 2606		CKSRYB104K16
C 2607		CEV101M10
C 2651		CKSRYB104K16
C 2652		CEV101M16
C 2653		CKSRYB103K50
C 2654		CKSQYB104K50
C 2655		CKSRYB103K50
C 2656		CEV4R7M50

B

Unit Number:CWM8243
(GEX-P6400TVP/EW, GEX-P6450TVP/ES)
Unit Name:TV TUNER UNIT

Circuit Symbol and No.	Part Name	Part No.
MISCELLANEOUS		
IC 2101	IC	CM0018AM
IC 2301	IC	LA1145M
IC 2352	IC	TC7SH02FU
IC 2401	IC	TA1290FN
IC 2501	IC	LA2120M
IC 2651	IC	TK11819M
Q 2150	Transistor	DTC114EK
Q 2151	Transistor	DTC114EK
Q 2152	Transistor	DTC114EK
Q 2153	Transistor	DTC114EK
Q 2154	Transistor	IMB11A
Q 2155	Transistor	IMB11A
Q 2156	Transistor	2SC4226
Q 2201	Transistor	2SC2735
Q 2301	Transistor	2SA1037K
Q 2351	Transistor	2SA1577
Q 2352	Transistor	DTC144EU
Q 2353	Transistor	2SC2735
Q 2354	Transistor	2SC2412K
Q 2355	Transistor	2SA1577
Q 2356	Transistor	DTC144EU
Q 2357	Transistor	2SC2735
Q 2358	Transistor	2SC2412K
Q 2359	Transistor	2SA1577
Q 2360	Transistor	DTC144EU
Q 2361	Transistor	2SC2735
Q 2362	Transistor	2SC2412K
Q 2363	Transistor	2SC2735
Q 2451	Transistor	2SA1037K
Q 2454	Transistor	2SC2412K
Q 2455	Transistor	2SA1037K
Q 2501	Transistor	2SC2412K
Q 2601	Transistor	2SD1664
D 2150	Diode	HVC136
D 2151	Diode	HVC136
D 2152	Diode	HVC136
D 2153	Diode	HVC136
D 2351	Diode	1SS355
D 2352	Diode	1SS355
D 2353	Diode	1SS355
D 2601	Diode	MA8056(H)
ZNR2150	Surge Protector	RCCA-201Q43UA-PI
ZNR2151	Surge Protector	RCCA-201Q43UA-PI
ZNR2152	Surge Protector	RCCA-201Q43UA-PI
ZNR2153	Surge Protector	RCCA-201Q43UA-PI
L 2107	Inductor	LCKA150J2520
L 2150	Inductor	LCTC1R0K2125
L 2151	Inductor	LCTC1R0K2125
L 2152	Inductor	LCTC1R0K2125
L 2153	Inductor	LCTC1R0K2125
L 2154	Inductor	LCTC1R0K2125
L 2155	Inductor	LCKA150J2520
L 2156	Inductor	LCYB12NJ1608
L 2157	Inductor	CTF1470
L 2161	Inductor	LCYB15NJ1608
L 2162	Inductor	LCYB15NJ1608
L 2163	Inductor	LCYB15NJ1608
L 2164	Inductor	LCYB15NJ1608
L 2201	Inductor	CTF1470
L 2202	Inductor	LCTA2R2J2520
L 2203	Inductor	LCTA2R2J2520
L 2204	Inductor	CTF1470

Circuit Symbol and No.	Part Name	Part No.
L 2205	Inductor	LCTC1R8K2125
L 2206	Inductor	LCTC2R2K2125
L 2207	Inductor	LCTC2R2K2125
L 2301	Coil	CTC1029
L 2302	Inductor	LCTA150J2520
L 2351	Inductor	CTF1379
L 2352	Inductor	CTF1379
L 2353	Coil	CTE1066
L 2354	Inductor	CTF1379
L 2356	Inductor	LCTC2R2K2125
L 2357	Inductor	CTF1379
L 2358	Inductor	CTF1379
L 2359	Inductor	CTF1379
L 2401	Inductor	LCTA2R2J2520
L 2402	Coil	CTE1149
L 2451	Inductor	LCKA6R8J2520
L 2452	Inductor	LCKA150J2520
L 2453	Inductor	LCKA150J2520
L 2501	Inductor	LCKA150J2520
L 2651	Transformer	CTX1053
L 2652	Inductor	LCTC220K2125
TC2110	Trimmer	CCL1048
TH2301	Thermistor	TN20-3U473K
CF2201	SAW Filter	CTF1566
CF2351	Filter	CTF1057
CF2451	Filter	CTF1568
X 2351	Crystal Resonator 22.70MHz	CSS1589
X 2352	Crystal Resonator 22.20MHz	CSS1588
X 2353	Crystal Resonator 21.70MHz	CSS1587
VR2301	Semi-fixed 47kΩ(B)	CCP1452
VR2302	Semi-fixed 47kΩ(B)	CCP1452
VR2303	Semi-fixed 47kΩ(B)	CCP1452
VR2401	Semi-fixed 4.7kΩ(B)	CCP1446
VR2751	Semi-fixed 10kΩ(B)	CCP1448
FE2201	Front End	CWB1094

RESISTORS

Circuit Symbol and No.	Part No.
R 2101	RAB4C102J
R 2108	RS1/16S393J
R 2109	RS1/16S223J
R 2110	RS1/16S1202F
R 2113	RS1/16S151J
R 2114	RS1/16S473J
R 2115	RS1/16S223J
R 2118	RS1/16S0R0J
R 2121	RS1/16S101J
R 2122	RS1/16S101J
R 2123	RS1/16S101J
R 2124	RS1/16S101J
R 2150	RS1/16S472J
R 2151	RS1/16S472J
R 2152	RS1/16S472J
R 2153	RS1/16S472J
R 2154	RS1/16S222J
R 2156	RS1/16S472J
R 2157	RS1/16S151J
R 2158	RS1/16S8R2J
R 2159	RS1/16S151J
R 2160	RS1/16S822J
R 2161	RS1/16S470J
R 2162	RS1/16S470J
R 2163	RS1/16S470J
R 2164	RS1/16S470J
R 2166	RS1/16S0R0J
R 2201	RS1/16S562J
R 2202	RS1/16S102J
R 2203	RS1/16S101J
R 2204	RS1/16S821J
R 2205	RS1/16S101J
R 2208	RS1/16S102J
R 2209	RS1/16S102J
R 2210	RS1/16S331J
R 2211	RS1/16S0R0J
R 2212	RS1/16S0R0J
R 2301	RS1/16S331J
R 2302	RS1/16S473J
R 2303	RS1/16S823J
R 2305	RS1/16S562J
R 2306	RS1/16S682J
R 2307	RS1/16S223J
R 2308	RS1/16S154J
R 2309	RS1/16S682J
R 2310	RS1/16S563J
R 2311	RS1/16S123J
R 2312	RS1/16S103J
R 2313	RS1/16S103J
R 2314	RS1/16S333J
R 2315	RS1/16S683J
R 2316	RS1/16S273J
R 2317	RS1/16S272J
R 2351	RS1/16S393J
R 2352	RS1/16S273J
R 2354	RS1/16S221J
R 2355	RS1/16S332J
R 2356	RS1/16S102J
R 2357	RS1/16S333J
R 2358	RS1/16S683J
R 2360	RS1/16S681J
R 2363	RS1/16S393J
R 2364	RS1/16S273J
R 2365	RS1/16S221J
R 2366	RS1/16S332J
R 2367	RS1/16S102J
R 2368	RS1/16S333J
R 2369	RS1/16S683J
R 2371	RS1/16S681J
R 2374	RS1/16S393J
R 2375	RS1/16S273J
R 2376	RS1/16S221J
R 2377	RS1/16S332J
R 2378	RS1/16S102J
R 2379	RS1/16S333J
R 2380	RS1/16S683J
R 2382	RS1/16S681J
R 2385	RS1/16S123J
R 2386	RS1/16S682J
R 2387	RS1/16S561J
R 2388	RS1/16S181J
R 2390	RS1/16S151J
R 2392	RS1/16S151J
R 2394	RS1/16S151J
R 2397	RS1/16S101J
R 2402	RS1/16S472J
R 2403	RS1/16S391J
R 2404	RS1/16S0R0J
R 2405	RS1/16S103J
R 2406	RS1/16S823J

Circuit Symbol and No.	Part Name	Part No.
R 2407		RS1/16S104J
R 2408		RS1/16S104J
R 2411		RS1/16S0R0J
R 2451		RS1/16S221J
R 2452		RS1/16S222J
R 2455		RS1/16S222J
R 2456		RS1/16S222J
R 2457		RS1/16S102J
R 2464		RS1/16S152J
R 2466		RS1/16S102J
R 2468		RS1/16S0R0J
R 2469		RS1/16S222J
R 2501		RS1/16S822J
R 2502		RS1/16S473J
R 2503		RS1/16S243J
R 2504		RS1/16S682J
R 2505		RS1/16S102J
R 2506		RS1/16S563J
R 2507		RS1/16S103J
R 2508		RS1/16S332J
R 2509		RS1/16S561J
R 2510		RS1/16S102J
R 2601		RS1/16S102J
R 2651		RS1/16S101J
R 2652		RS1/16S102J
R 2701		RS1/16S101J
R 2702		RS1/16S101J
R 2703		RS1/4S0R0J

CAPACITORS

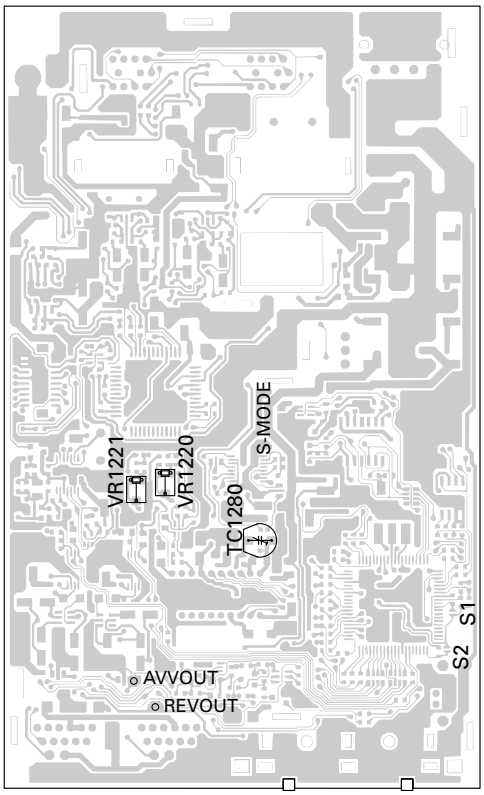
Circuit Symbol and No.	Part Name	Part No.
C 2101		CKSRYB103K50
C 2102		CKSRYB103K50
C 2103		CKSRYB103K50
C 2104		CKSRYB103K50
C 2113		CKSRYB102K50
C 2114		CKSRYB153K50
C 2116		CCSRTH180J50
C 2117		CKSRYB224K16
C 2118		CKSRYB152K50
C 2120		CKSRYB102K50
C 2121		CKSRYB102K50
C 2122		CKSRYB223K50
C 2123		CKSRYB103K50
C 2125		CCSRCH681J50
C 2126		CCSRCH681J50
C 2127		CCSRCH681J50
C 2128		CCSRCH681J50
C 2129		CEV470M6R3
C 2150		CCSRCH470J50
C 2151		CCSRCH470J50
C 2152		CCSRCH470J50
C 2153		CCSRCH470J50
C 2154		CKSRYB103K50
C 2155		CKSRYB103K50
C 2156		CKSRYB103K50
C 2157		CKSRYB103K50
C 2160		CKSRYB103K50
C 2161		CEV100M10
C 2162		CCSRCH5R0D50
C 2163		CCSRCH5R0D50
C 2164		CCSRCH5R0D50
C 2165		CCSRCH5R0D50
C 2166		CCSRCK2R0C50
C 2167		CCSRCKR50C50
C 2169		CKSRYB103K50
C 2171		CKSRYB102K50
C 2172		CKSRYB102K50
C 2201		CKSRYB102K50
C 2202		CKSRYB105K10
C 2203		CKSRYB103K50
C 2204		CKSRYB103K50
C 2205		CCSRCH101J50
C 2206		CKSRYB103K50
C 2207		CCSRCH101J50
C 2209		CEV101M16
C 2210		CKSRYB103K50
C 2211		CKSRYB103K50
C 2212		CCSRCH681J50
C 2213		CKSRYB103K50
C 2214		CKSRYB103K50
C 2301		CKSRYB103K50
C 2302		CKSRYB223K50
C 2303		CCSRCH101J50
C 2304		CKSRYB105K10
C 2305		CCSRCH220J50
C 2306		CKSRYB473K50
C 2307		CKSRYB103K50
C 2308		CEV220M16
C 2309		CKSRYB223K50
C 2310		CKSRYB104K16
C 2311		CKSRYB103K50
C 2312		CKSRYB223K50
C 2313		CKSRYB103K50
C 2314		CKSRYB105K10
C 2315		CKSRYB104K16
C 2351		CEV100M10
C 2352		CKSRYB104K16
C 2353		CKSRYB104K16
C 2354		CKSRYB103K50
C 2355		CCSRCH101J50
C 2356		CCSRCH121J50
C 2357		CCSRCH100D50
C 2358		CCSRCKR50C50
C 2360		CKSRYB104K16
C 2361		CKSRYB104K16
C 2362		CKSRYB103K50
C 2363		CCSRCH101J50
C 2364		CCSRCH121J50
C 2365		CCSRCH100D50
C 2366		CCSRCKR50C50
C 2368		CKSRYB104K16
C 2369		CKSRYB104K16
C 2370		CKSRYB103K50
C 2371		CCSRCH101J50
C 2372		CCSRCH121J50
C 2373		CCSRCH7R0D50
C 2374		CCSRCKR50C50
C 2376		CKSRYB103K50
C 2377		CKSRYB103K50
C 2378		CKSRYB103K50
C 2379		CKSRYB103K50
C 2380		CEV100M10
C 2381		CKSRYB103K50
C 2382		CKSRYB102K50
C 2385		CCSRCK2R0C50
C 2387		CKSRYB104K16

Circuit Symbol and No.	Part Name	Part No.
C 2389		CCSRCH101J50
C 2403		CEV470M16
C 2404		CKSRYB103K50
C 2405		CKSRYB224K16
C 2407		CKSRYB473K50
C 2408		CKSRYB103K50
C 2409		CCSRCH390J50
C 2411		CKSRYB103K50
C 2412		CKSRYB103K50
C 2413		CKSRYB103K50
C 2414		CKSQYB335K6R3
C 2452		CKSRYB103K50
C 2453		CEV220M16
C 2455		CCSRCH680J50
C 2501		CKSRYB103K50
C 2502		CEV220M16
C 2503		CKSRYB102K50
C 2504		CKSRYB682K50
C 2505		CKSRYB104K16
C 2506		CEV220M16
C 2507		CEV100M10
C 2508		CKSRYB473K50
C 2509		CKSRYB224K16
C 2510		CKSRYB223K50
C 2512		CKSRYB473K50
C 2514		CKSRYB104K16
C 2515		CKSRYB105K10
C 2601		CEV101M16
C 2602		CKSRYB104K16
C 2603		CEV101M10
C 2604		CKSRYB473K50
C 2605		CEV101M10
C 2606		CKSRYB104K16
C 2607		CEV101M10
C 2651		CKSRYB104K16
C 2652		CEV101M16
C 2653		CKSRYB103K50
C 2654		CKSQYB104K50
C 2655		CKSRYB103K50
C 2656		CEV4R7M50

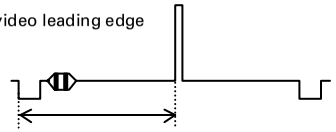
6. ADJUSTMENT

6.1 ADJUSTMENT

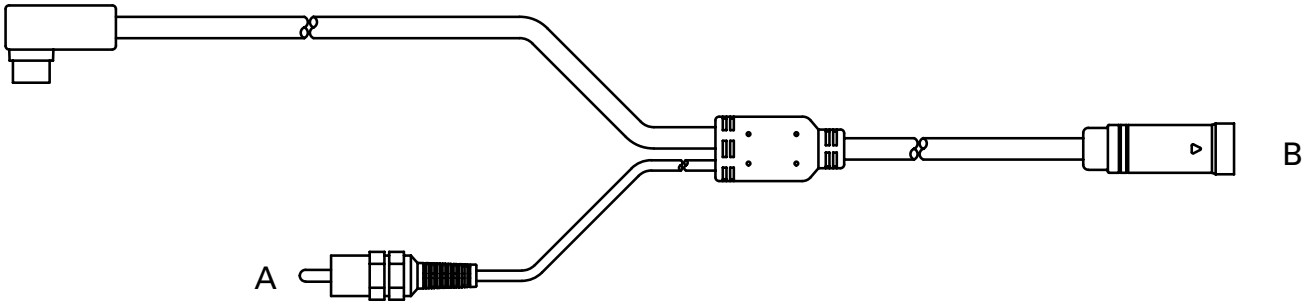
● **Adjustment Point**

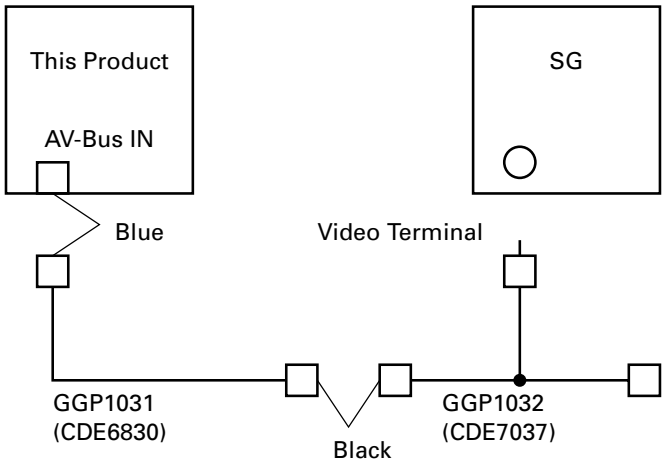


● Mother Section

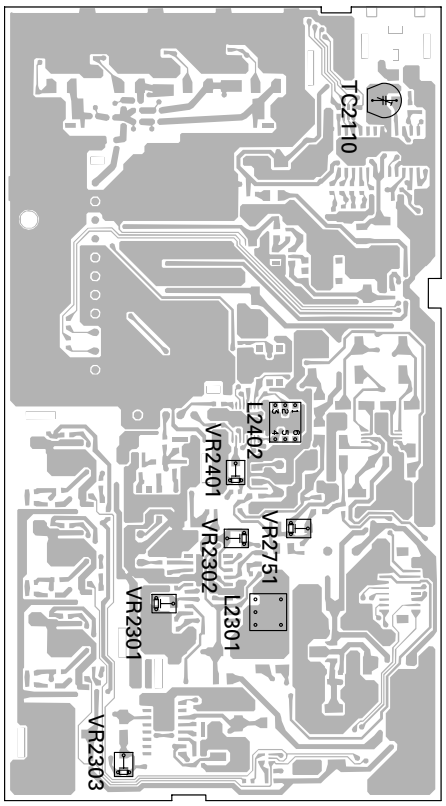
Step	Adjustment item	Input signal (input point, waveform, specs, and other conditions)	Output signal (measuring point, waveform, circuit)	Measuring instrument	Specs.	Symptoms with poor adjustment	Adjusting point
1	Connect the power cord.						
2	VDD_5V voltage confirmation		(+) terminal of C1813 (electrolytic capacitor) on the silk-printed side	DC voltmeter	5.0 ± 0.5V	No operation in the following adjustment steps.	
3	To enter the service operation mode	Short-circuit S-MODE.					
4	SYSTEM_5V voltage confirmation		The silk-printed side terminal of L1280 (inductor)	DC voltmeter	5.0 ± 0.5V	Low voltage: No picture, no sound High voltage: Parts may be damaged	
5	SYSTEM_9V voltage confirmation		The silk-printed side terminal of L1200 (inductor)	DC voltmeter	9.0 ± 0.5V	Low voltage: No picture, no sound High voltage: Parts may be damaged	
6	To enter the service mode 1	Short-circuit S1, then reset the unit by pressing the reset button					
7	Video output level (front) adjustment	Input: AV-BUS IN Signal: 100IRE (white 100%) Level: 1.0Vp-p (via 75 ohms) Measuring conditions: Select the 75-ohm terminal on the measuring instrument.	Measuring point: AVVOUT Sync tip to 100IRE (waveform top) 	Oscilloscope	1.0 ± 0.05Vp-p	Lower: The picture becomes darker. The sync is easily unlocked. Higher: The picture becomes brighter.	VR1221
8	Video output level (rear) adjustment	Input: AV-BUS IN Signal: 100IRE (white 100%) Level: 1.0Vp-p (via 75 ohms) Measuring conditions: Select the 75-ohm terminal on the measuring instrument.	Measuring point: REVOUT Sync tip to 100IRE (waveform top) 	Oscilloscope	1.0 ± 0.05Vp-p	Lower: The picture becomes darker. The sync is easily unlocked. Higher: The picture becomes brighter.	VR1220
9	To enter the service mode 2	Open S1. Short-circuit S2, then reset the unit by pressing the reset button.					
10	OSD display position adjustment	Input: none Signal: none Level: none Mode: test mode (with positioning adjustment OSD output) Measuring conditions: Select the 75-ohm terminal on the measuring instrument.	Measuring point: REVOUT The time between the Sync leading edge and video leading edge 	Oscilloscope	35.0 ± 0.1µsec	Shorter: The OSD display becomes thin. Longer: The OSD display becomes thick. Depending on rear monitors connected, the right side of the OSD display may be invisible.	TC1280
11	To exit from the service mode	Open S2 and S-MODE, then reset the unit.					

About connecting cables:
In the steps 7 and 8, the video signal should be applied to the AV-BUS IN terminal.
The AV-BUS connector has been designed specially for this model.
Therefore, use the following cables when the video signal is applied from the signal generator:
GGP1032(CDE7037) (see below.) and GGP1031(CDE6830) (provided with the product)
1) Connect the (A) side of the cable GGP1032(CDE7037) to the signal generator.
2) Connect the (B) side of the cable GGP1032(CDE7037) to the black side of the cable GGP1031(CDE6830).
3) Connect the blue side of the cable GGP1031(CDE6830) to the AV-BUS IN terminal on the unit.

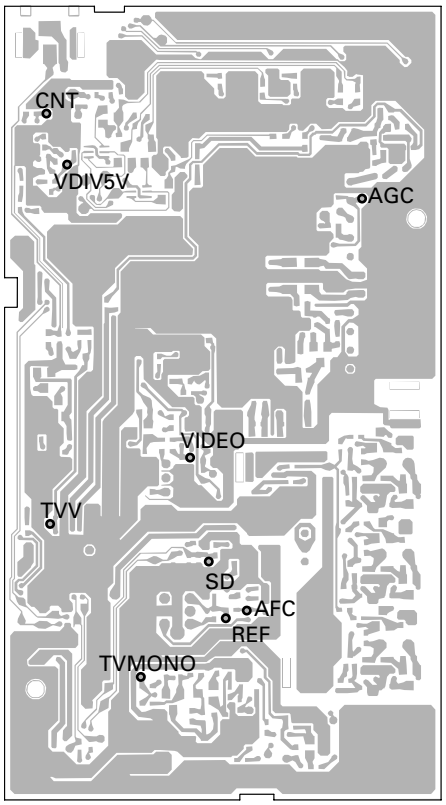




● Adjustment Point



● Test Point



● TV Tuner Section (NTSC)
(GEX-P6400TV/UC, GEX-P6450TV/ES)

Notes:
1. TV sensitivity: based on 75-ohm loaded (UN BAL) voltage and video carrier level
2. Audio carrier level: (Video carrier level) -6dB
3. Adjustments should be made with the ANT1 selected.

Step	Adjustment item	Input signal (input point, waveform, specs, and other conditions)	Output signal (measuring point, waveform, adjusting method)	Adjusting instrument and adjusting points	Specs.	Symptoms with poor adjustment
1	Video detection coil adjustment	Apply the RF signal of the rated level (59dBμV at 75ohms) that is synchronized with US11ch (P carrier: 199.25MHz) and modulated with a white signal (White 100%, audio: monaural 400Hz, 25kHz/div).	Measuring point: TP. VIDEO or through-hole marked with "○ and VIDEO" The DC level when the rated input is applied.	DC meter L2402	Minimum within the allowable rotating range	Sag or ringing on the video signal
2	AGC start adjustment		Measuring point: TP. AGC or IC2401-11pin marked with " □ " (1) Voltage with -20dBμV input: Va (2) Voltage with 50dBμV input: Vb	DC meter VR2401	Vb = Va -0.9V	Waveform deformed due to video S/N deterioration or strong input
3	Video output level adjustment		Measuring point: TP.TVV or Q2454 emitter Sync tip to 100IRE (waveform top)	Oscilloscope VR2751	1.0 ± 0.1Vp-p	White luminance is too high or too low.
4	Audio detection coil adjustment		Measuring point: TP.REF, TP.AFC or IC2301-pin 9 and pin 12 marked with " □ " The DC level between the above 2 points	Center meter L2301	0	Audio distortion deteriorated or attenuated
5	Soft mute adjustment		Measuring point: TP.TVMONO or through-hole marked with "○ and TVMONO" (1) Output level with the rated input: Vc (2) Output level with -20dBμV input	Noise meter VR2301	Vc -20 ± 1dB	Audio noise changed at the time of unlocked tuning or at weak electronic strength areas.
6	Audio output level adjustment		Measuring point: TP.TVMONO or through-hole marked with "○ and TVMONO" Output level with the rated input (reception: Hi-Z)	Noise meter VR2303	240mVrms	Audio level is too high or too low.
7	SD sensitivity adjustment and confirmation		Measuring point: TP.SD or IC2301-Pin19 marked with " □ " (1) In case of 32dBμV input (2) In case of 37dBμV and 27dBμV input DC levels	DC meter VR2302	(1) Low to High (2) 37dBμV: H, 27dBμV: L	SEEK stop sensitivity changed
8	Diversity adjustment		Measuring point: TP.CNT, TP.VDIV5V or IC2301-Pin2 and Pin19 marked with " □ " With the rated input, the voltage at TP.CNT (or Pin 2) should be 0.5 times larger than that at TP.VDIV5V (or Pin 19).	DC meter TC2110	(VDIV5V / 2) ± 0.1V	Abnormal diversity operation at weak electronic strength areas

● TV Tuner Section (PAL)
(GEX-P6400TVP/EW, GEX-P6450TVP/ES)

Notes:
1. TV sensitivity: based on 75-ohm loaded (UN BAL) voltage and video carrier level
2. Audio carrier level: (Video carrier level) -10dB
3. Adjustments should be made with the ANT1 selected.

Step	Adjustment item	Input signal (input point, waveform, specs, and other conditions)	Output signal (measuring point, waveform, adjusting method)	Adjusting instrument and adjusting points	Specs.	Symptoms with poor adjustment
1	Video detection coil adjustment	Apply the RF signal of the rated level (59dBμV at 75ohms) that is synchronized with E8ch (P carrier: 196.25MHz) and modulated with a white signal (White 100%, audio: monaural 400Hz, 50kHz/div).	Measuring point: TP. VIDEO or through-hole marked with "○ and VIDEO" The DC level when the rated input is applied.	DC meter L2402	Minimum within the allowable rotating range	Sag or ringing on the video signal
2	AGC start adjustment		Measuring point: TP. AGC or IC2401-11pin marked with " □ " (1) Voltage with -20dBμV input: Va (2) Voltage with 50dBμV input: Vb	DC meter VR2401	Vb = Va -0.9V	Waveform deformed due to video S/N deterioration or strong input
3	Video output level adjustment		Measuring point: TP.TVV or Q2454 emitter Sync tip to 100IRE (waveform top)	Oscilloscope VR2751	1.0 ± 0.1Vp-p	White luminance is too high or too low.
4	Audio detection coil adjustment		Measuring point: TP.REF, TP.AFC or IC2301-pin 9 and pin 12 marked with " □ " The DC level between the above 2 points	Center meter L2301	0	Audio distortion deteriorated or attenuated
5	Soft mute adjustment		Measuring point: TP.TVMONO or through-hole marked with "○ and TVMONO" (1) Output level with the rated input: Vc (2) Output level with -20dBμV input	Noise meter VR2301	Vc -20 ± 1dB	Audio noise changed at the time of unlocked tuning or at weak electronic strength areas.
6	Audio output level adjustment		Measuring point: TP.TVMONO or through-hole marked with "○ and TVMONO" Output level with the rated input (reception: Hi-Z)	Noise meter VR2303	240mVrms	Audio level is too high or too low.
7	SD sensitivity adjustment and confirmation		Measuring point: TP.SD or IC2301-Pin19 marked with " □ " (1) In case of 32dBμV input (2) In case of 37dBμV and 27dBμV input DC levels	DC meter VR2302	(1) Low to High (2) 37dBμV: H, 27dBμV: L	SEEK stop sensitivity changed
8	Diversity adjustment		Measuring point: TP.CNT, TP.VDIV5V or IC2301-Pin2 and Pin19 marked with " □ " With the rated input, the voltage at TP.CNT (or Pin 2) should be 0.5 times larger than that at TP.VDIV5V (or Pin 19).	DC meter TC2110	(VDIV5V / 2) ± 0.1V	Abnormal diversity operation at weak electronic strength areas

6.2 TEST MODE

(1) OSD position-adjusting mode
1. To enter the OSD position-adjusting mode, apply 5V to SMODE1 (Pin 40), reset and start the unit.
2. The OSD shows (!) marks arranged in a line vertically around the screen center.
3. When the OSD SW is switched to ON, the above video signal is output from the front video output (AV-BUS) and the rear video output (RCA).
When the OSD SW is switched to OFF, the above video signal is output from only the rear video output (RCA).
4. To exit from the OSD position-adjusting mode, reset and start the unit when the SMODE1 (Pin 40) keeps 0V.

(2) Video level adjusting mode
1. To enter the video level adjusting mode, apply 5V to SMODE2 (Pin 50), reset and start the unit.
2. The AV-BUS video signal without OSD data is output from the front video output (AV-BUS), and the AV-BUS video signal with OSD data is output from the rear video output (RCA), irrespective of the position of the OSD SW.
3. To exit from the video level adjusting mode, reset and start the unit when the SMODE2 (Pin 50) keeps 0V.

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DISASSEMBLY

● **Removing the Case (Fig.1)**

1 Remove the eight screws and then remove the Case.

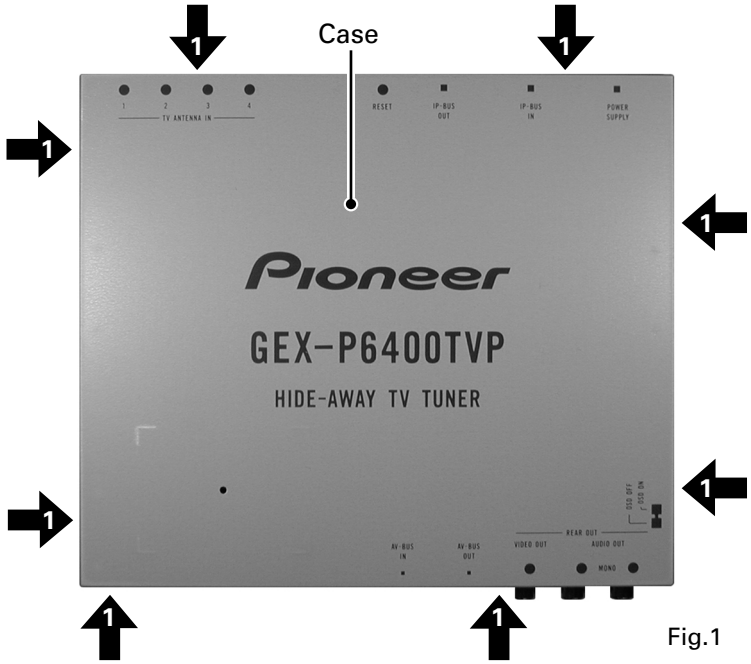


Fig.1

● **Removing the Mother Unit (Fig.2)**

1 Straight the tabs at three locations indicated.

2 Remove the two screws.

Disconnect the connector and then remove the Mother Unit.

● **Removing the TV Tuner Unit (Fig.2)**

3 Straight the tabs at three locations indicated.

4 Remove the two screws.

Disconnect the connector and then remove the TV Tuner Unit.

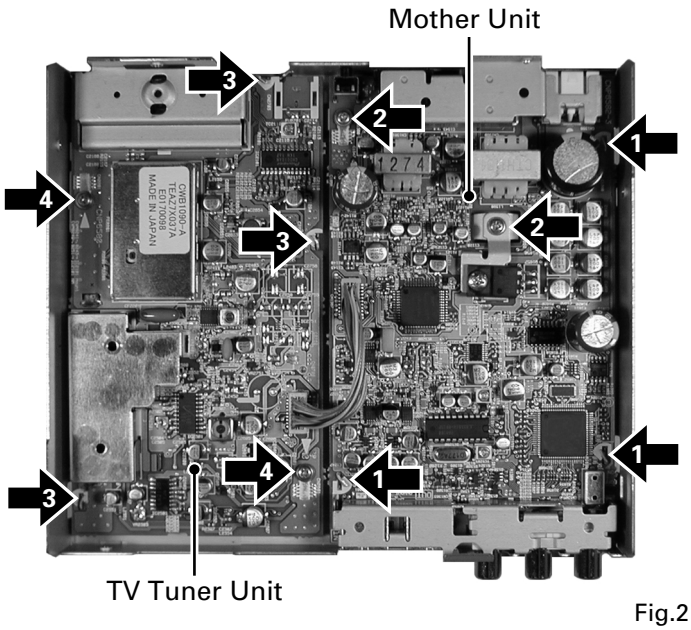
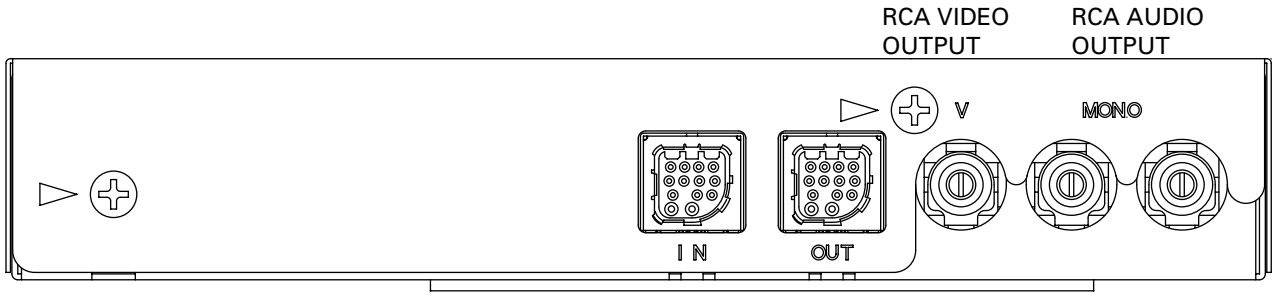
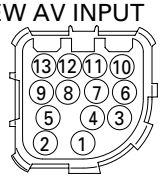


Fig.2

7.1.2 CONNECTOR FUNCTION DESCRIPTION

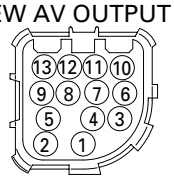


NEW AV INPUT

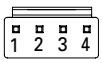


1. COMP GND
2. COMP(IN)
3. REMPW
4. IP-SEL1
5. IP-SEL2
6. LED-V
7. GND
8. PEEMUTE
9. PEE-
10. REM(OUT)
11. NEW AV SENSE
12. AVONOUT
13. PEE+

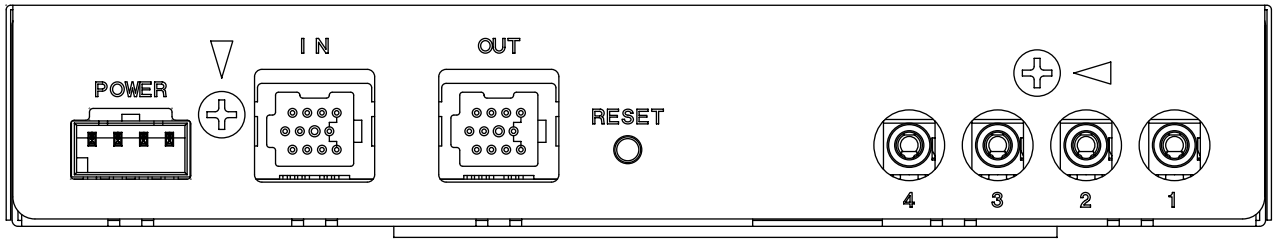
NEW AV OUTPUT



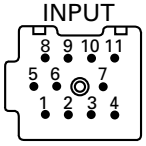
1. COMP GND
2. COMP(OUT)
3. REMPW
4. IP-SEL1
5. IP-SEL2
6. LED-V
7. GND
8. PEEMUTE
9. PEE-
10. REM(IN)
11. NEW AV SENSE
12. AVONOUT
13. PEE+



1. GND
2. BUP
3. NC(ACC)
4. NC(PARK)

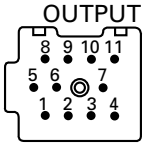


IP-BUS INPUT



1. BUS+
2. GND
3. GND
4. NC
5. BUS-
6. GND
7. BUS L+ INPUT
8. ASENB
9. BUS R+ INPUT
10. BUS R- INPUT
11. BUS L- INPUT

IP-BUS OUTPUT



1. BUS+
2. GND
3. GND
4. NC
5. BUS-
6. GND
7. BUS L+ OUTPUT
8. ASENB
9. BUS R+ OUTPUT
10. BUS R- OUTPUT
11. BUS L- OUTPUT

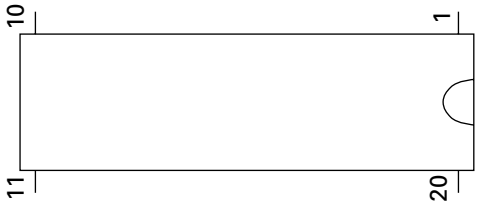
TV ANTENNA INPUTS

7.2 IC

● **Pin Function (M35014-001SP)**

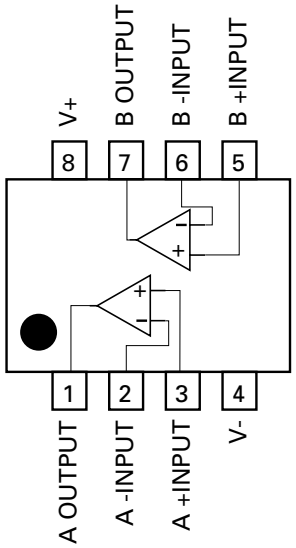
Pin No.	Pin Name	I/O	Function and Operation
1	OSC1	I	External oscillation circuit I/O
2	OSC2	O	External oscillation circuit I/O
3	$\overline{CS}$	I	Chip select input
4	SCK	I	Serial clock input
5	SIN	I	Serial data input
6	$\overline{AC}$	I	Auto-clear input
7	VDD2		Power supply
8	CVIDEO	O	Composite video output
9	LECHA	I	Character level input
10	CVIN	I	Composite video input
11	VSS		Ground
12-15	P0-3	O	Output port P0-3
16	OSCOUT	O	External Sync oscillation circuit I/O
17	OSCIN	I	External Sync oscillation circuit I/O
18	HOR	I	H sync
19	VERT	I	V sync
20	VDD1		Power supply

*M35014-001SP

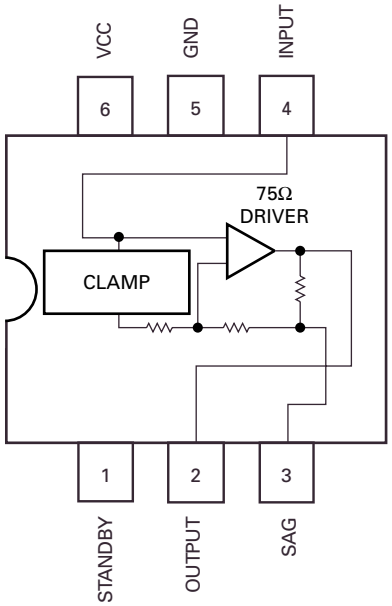


IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

NJM4558E



TK15405MI

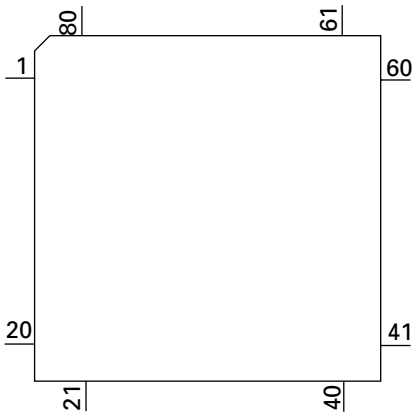


● Pin Function (PE5300A)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	NC			OPEN (Not used: L fixed)
2	TVSDST	I	C	Station/stereo detection input
3	TVBIL	I	C	OPEN (Not used with this product)
4	AVSS			Hideaway single operation test mode input
5	NC			OPEN (Not used: L fixed)
6	TVMPX	O	C	OPEN (Not used with this product)
7	AVREF1			D/A converter reference voltage input
8-10	NC			OPEN (Not used: L fixed)
11	SDTSDA	I/O	C	Serial data input /output for TV tuner PLL
12	SCKSCL	I/O	C	Serial clock input for TV tuner PLL
13	SCE	O	C	OPEN (Not used with this product)
14	SDA	I/O	C	Serial data input/output
15	SCL	I/O	C	Serial clock input
16	TSI	I	C	Factory test mode data input
17	TSO	O	C	Factory test mode data output
18	TSCK	O	C	Factory test mode clock output
19	TVSEEK	O	C	OPEN (Not used with this product)
20	TRAPSW	O	C	TV tuner trap filter ON/OFF output
21	BRSBGI	O	C	TV tuner country code BG/I output
22	BRSDKI	O	C	TV tuner country code DK/I output
23	NC			OPEN (Not used: L fixed)
24	OSDDT	O	C	OSD serial data output
25	OSDCK	O	C	OSD serial clock output
26	OSDCS	O	C	OSD chip select output
27	OSDAC	O	C	OSD all clear output
28	TVSEL	O	C	TV tuner source on selection output
29	LEDPW	O	C	OPEN (Not used with this product)
30	REMUPW	O	C	OPEN (Not used with this product)
31	RVSEL	O	C	OPEN (Not used with this product)
32	FVSEL	O	C	Main video output selection control
33	VSS			Microcomputer ground
34	RVMUTE	O	C	Rear video output MUTE
35	FVMUTE	O	C	Main video output MUTE
36-39	NC			OPEN (Not used: L fixed)
40	SMODE1	I	C	OSD position adjustment (for service)
41-49	NC			OPEN (Not used: L fixed)
50	SMODE2	I	C	Video level adjustment (for service)
51	NC			OPEN (Not used: L fixed)
52	OSDARI	I	C	Front monitor OSD ON/OFF (H:OFF, L:ON)
53	IPLASW	I	C	IP-BUS slave address selection SW input (L fixed)
54	IPORAD	O	C	OPEN (Not used with this product)
55	IPPW	O	C	IP-BUS driver power supply control output
56	TX(IP-BUS)	O	C	IP-BUS data output
57	RX(IP-BUS)	I	C	IP-BUS data input
58	MUTEIP	O	C	IP-OUT audio mute output
59	MUTERE	O	C	Rear OUT audio mute output
60	RESET	I		Reset input
61	REMIN	I	C	Remote control input
62	BSENS	I	C	Backup sense input
63	ASENS	I	C	ACC sense input
64	PBSENS	I	C	OPEN (Not used with this product)
65	ILMSEN	O	C	OPEN (Not used with this product)
66	DSENS	O	C	OPEN (Not used with this product)
67	OPSENS	O	C	OPEN (Not used with this product)
68	VDD			Microcomputer power supply
69, 70	X2, 1			Microcomputer system clock oscillation crystal connection
71	IC(Vpp)			Microcomputer ground connection
72	XT2			Sub clock input (Not connected)
73	TESTIN	I		Chip test input
74	AVDD			A/D converter analog power supply

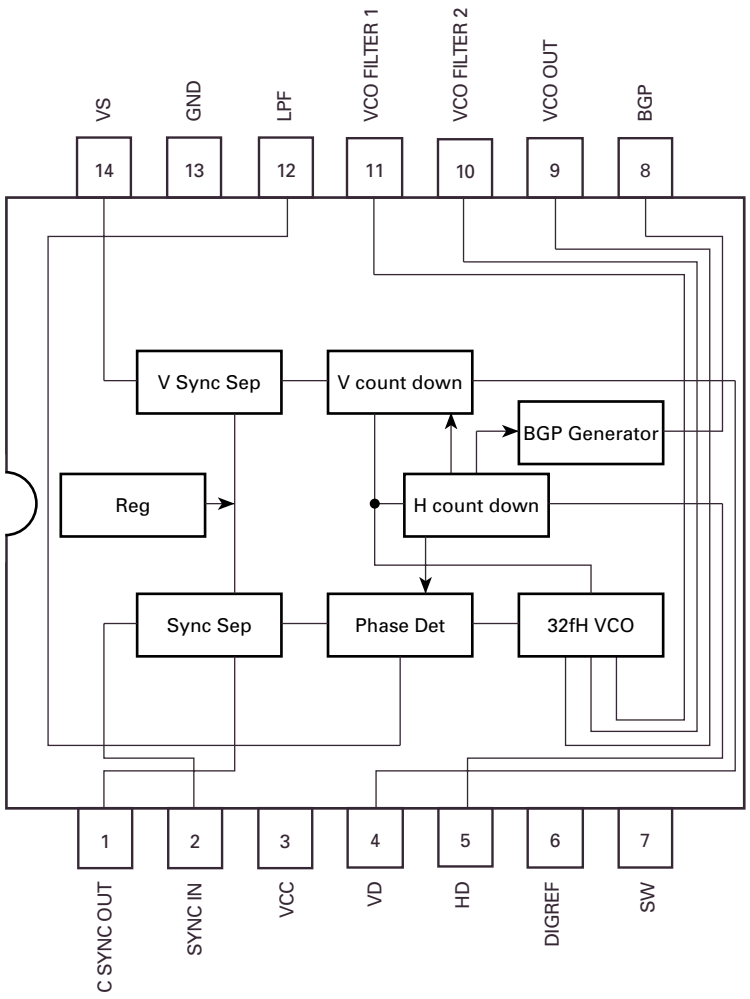
Pin No.	Pin Name	I/O	Format	Function and Operation
75	AVREF0			A/D converter reference voltage input
76	TVSL	I	C	TV tuner signal level analog input
77	TVSIM	I	C	TV tuner version selection input (0V:/EW, 1.2V:/ES, 3.8V:PAL/ES, 5V:/UC)
78	NC			OPEN (Not used: L fixed)
79	TVPW	O	C	TV power supply control output
80	SYSPW	O	C	System power supply control output

*PE5300A

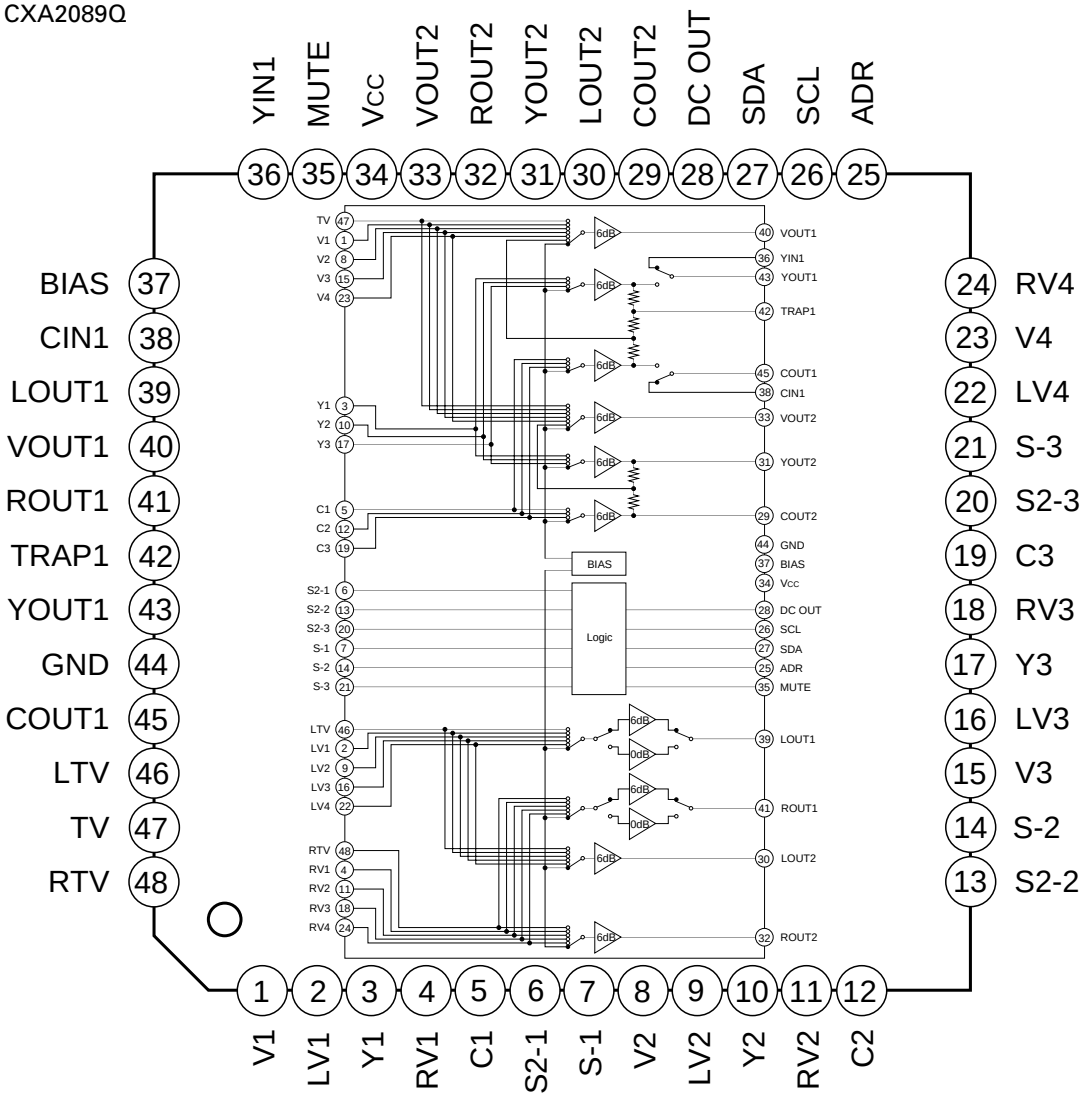


Format	Meaning
C	C MOS

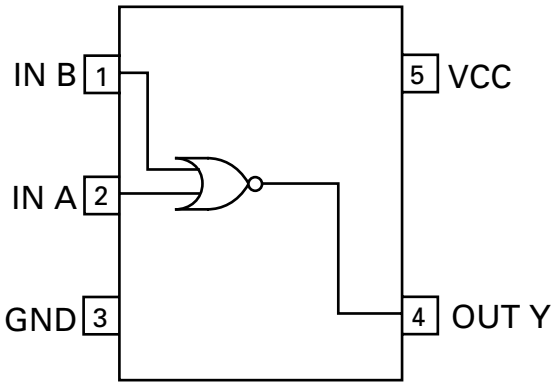
*NJW1303V



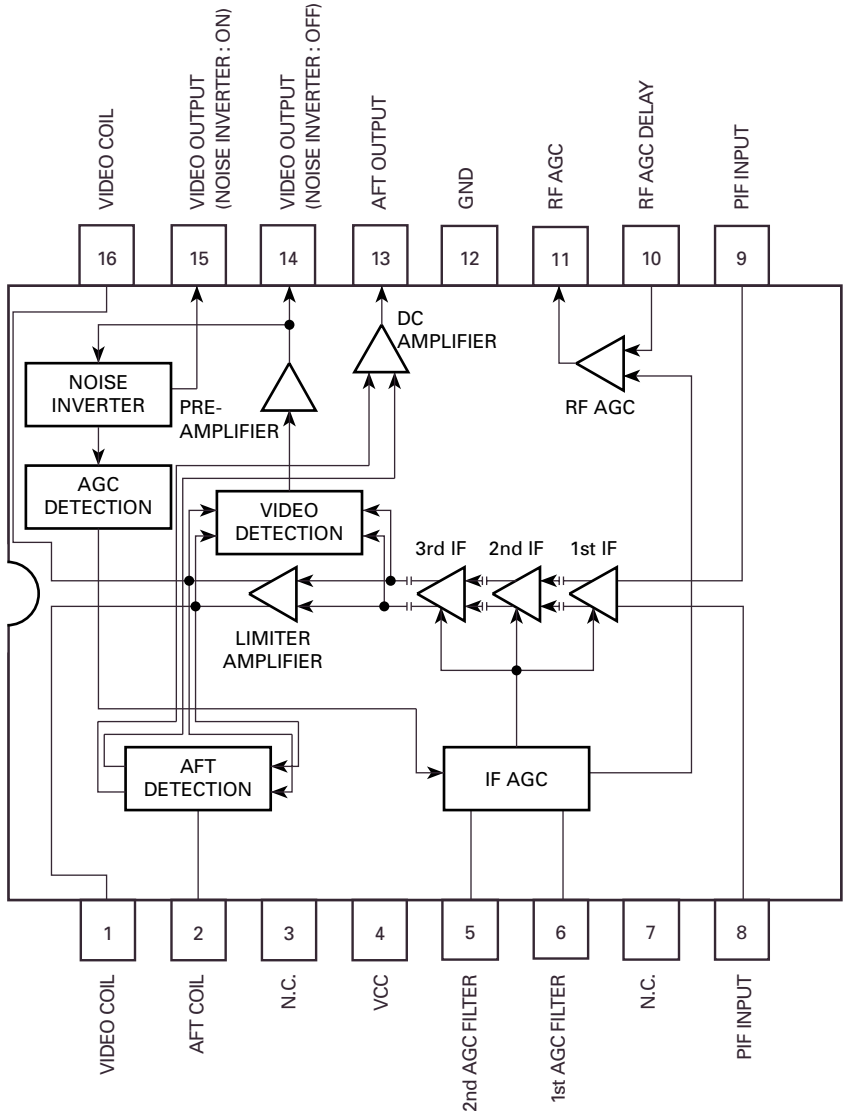
CXA2089Q



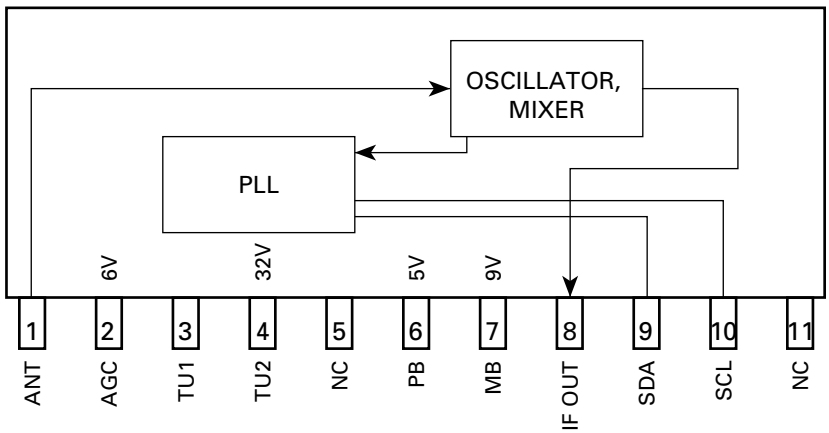
*TC7SH02FU(GEX-P6400TVP/EW, GEX-P6450TVP/ES)



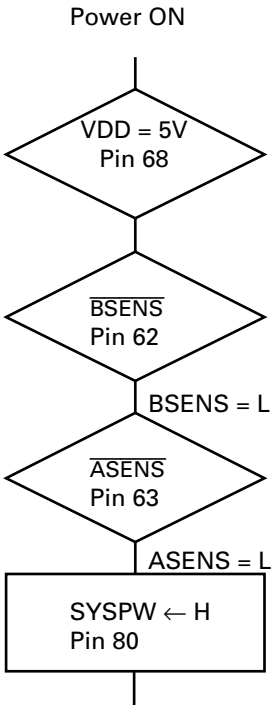
TA1290FN



● Front End(FE2201:CWB1093)(GEX-P6400TV/UC, GEX-P6450TV/ES)
Front End(FE2201:CWB1094)(GEX-P6400TVP/EW, GEX-P6450TVP/ES)



7.3 OPERATIONAL FLOW CHART



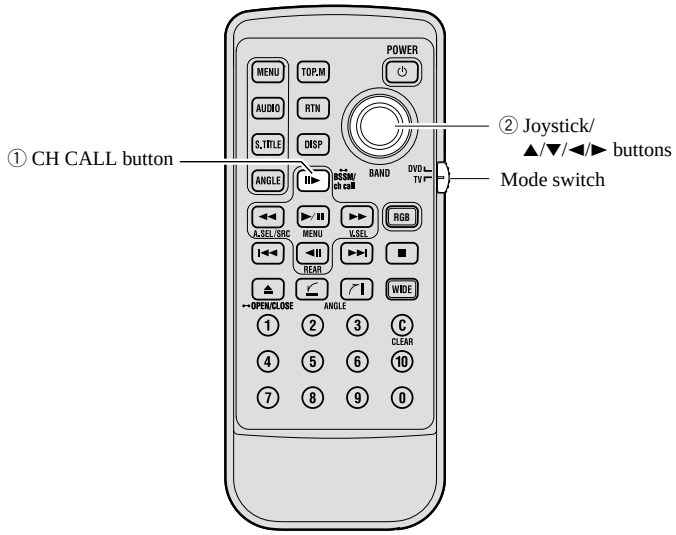
Completes power-on operation.

8. OPERATIONS

● GEX-P6400TV/UC

Optional Remote Control CD-R99 (sold separately)

The optional remote control CD-R99 is mainly for use by rear seat passengers. When using, point at the front seat display remote control sensor.



■ Other remote controls

You can also perform operations with the remote controls shown below.
Operate using the buttons that correspond to those on the optional remote control CD-R99, as shown in the chart.

The optional remote control CD-R99	A Pioneer car DVD player's remote control*
① CH CALL button	STEP (II►) button
② ▲/▼/◄/► buttons	Joystick

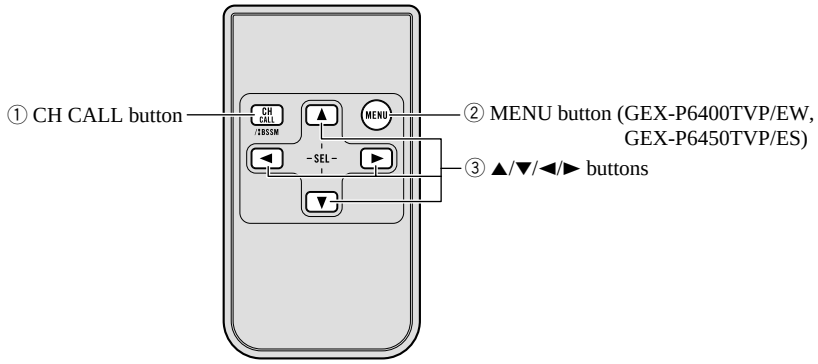
Mode switch:
When operating a TV, be sure to set the "Remote control operation mode switch" to the "TV" position.

*···SDV-P7, AVX-P7300DVD, XDV-P90

● GEX-P6400TVP/EW, GEX-P6450TV/ES, GEX-P6450TVP/ES

Remote Control (Supplied)

This product's supplied remote control is mainly for use by rear seat passengers. When using, point at the front seat display remote control sensor.



■ Other remote controls

You can also perform operations with the remote controls shown below.
Operate using the buttons that correspond to those on this product's supplied remote control, as shown in the chart.

This product's supplied remote control	A Pioneer car DVD player's remote control*
① CH CALL button	STEP (II►) button
② MENU button	PLAY/PAUSE (►/II) button
③ ▲/▼/◄/► buttons	Joystick
Mode switch: No operation mode switch.	Mode switch: When operating a TV, be sure to set the "Remote control operation mode switch" to the "TV" position.

*···SDV-P7, AVX-P7300DVD, XDV-P9II

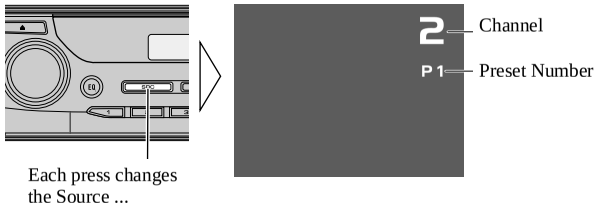
Basic Operation

When using with a Pioneer AV Receiver (e.g. AVH-P6400CD, AVH-P6400), please read the AV Receiver's Operation Manual.

Switching the Source

■ Head Unit Group 1 and 4

1. **Switch the display image source to this product.**
   For details, refer to the connected unit's manual.
2. **Select the TV source on the Head Unit.**



■ Head Unit Group 2 and 3

1. **Switch the display image source to this product.**
   For details, refer to the connected unit's manual.
2. **Set the source to "External" (or "TV", "Television").**

Note:
- Switching power to the Head Unit (the unit controlling this product) OFF, or selecting a source other than TV does not switch power to this product OFF.
  Although this product is designed to assure no problems occur during use, if for some reason you want to switch power OFF, switch ACC OFF on the car side.
- With Head Unit Group 2 or 3 models, "TV" or "Television" may not be indicated in the display.

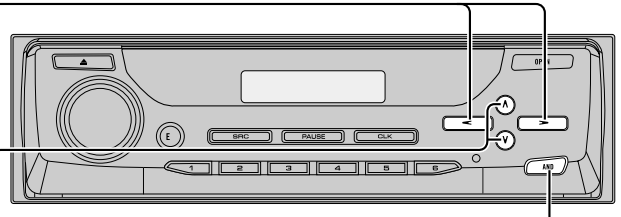
Basic Operation of TV Tuner

Manual and Seek Tuning

- **You can select the tuning method by changing the length of time you press the ◄/► button.**

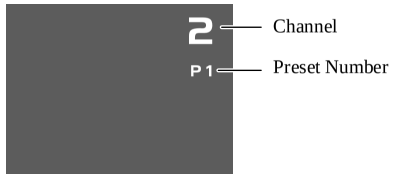
Manual Tuning (step by step)	0.5 seconds or less
Seek Tuning	0.5 seconds or more

Note:
- If you continue pressing the button for longer than 0.5 seconds, you can skip broadcasting stations. Seek Tuning starts as soon as you stop pressing the button.



BAND

TV1 → TV2
Operation is possible only with the Head Unit's BAND (◄►) button.



Preset Tuning

- **You can recall memorized stations.**

  You can memorize and recall stations using buttons 1–6 in the same way as with Head Unit tuner Preset Tuning.

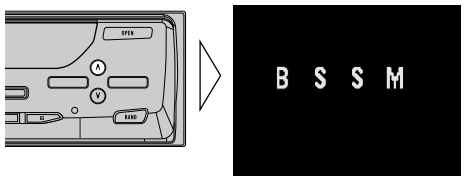
BSSM (Best Station Sequential Memory)

The BSSM function automatically memorizes strongly transmitted broadcast stations in order from the lowest channel up.

Note:
- Up to 12 stations can be memorized in 1 Band.
- In regions where reception of no more than 12 station is possible, previously memorized stations may remain in memory.

■ Head Unit Group 1

1. **Press the FUNCTION (A.MENU) button and select the BSSM mode (BSSM) in the FUNCTION (AUDIO) Menu.**
2. **To switch the BSSM ON, press the ▲ button.**



- **To cancel the process, press the ▼ button in the FUNCTION (AUDIO) Menu before memorization is complete.**

■ Head Unit Group 2

1. **Press the FUNCTION button and select the Preset Scan/BSSM mode (FUNC 1) in the Function Menu.**
2. **To switch the BSSM ON, press the ▲ button for 2 seconds.**

- **To cancel the process, press the ▼ button in the Function Menu before memorization is complete.**

■ Head Unit Group 3 and 4

- **To switch the BSSM ON, press the DISPLAY button for 2 seconds.**
- **To cancel the process, press the DISPLAY button again before memorization is complete.**

Note:
- The button for BSSM differs depending on the model.
  - ∗ KEH-P4020: BSM button
  - ∗ KEH-P4010: PAUSE/SCAN button

■ The optional remote control CD-R99

You can also perform BSSM with the optional remote control CD-R99.

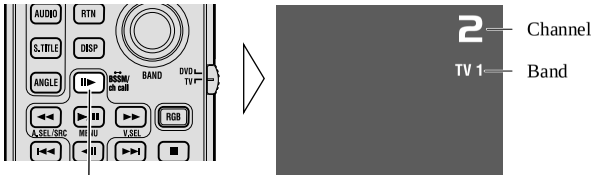
- **To switch the BSSM ON, press the CH CALL button for 2 seconds.**
- **To cancel the process, press the CH CALL button for 2 seconds again before memorization is complete.**

Confirming Current Channel and Other Settings

If the current audio source is TV, reception information such as the channel and band is displayed. You can also display to the preset channel list.

- **Select the desired mode in the following order:**

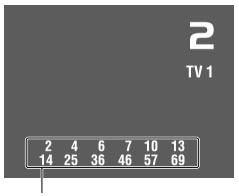
(Channel Recall)



Each Press changes the Mode ...

Channel Recall → Preset channel list → Indication OFF

(Preset channel list)



Channels memorized (preset) in that Band

Note:
- Recalled indications are displayed for 8 seconds.

Operating the Setting Menu(GEX-P6400TVP/EW)

Selecting the Country Group

In this product, channels are preset for each country group. Selecting the appropriate country group for your reception area enables reception of multiple channels.

1. **Press the MENU button on the remote control and select the Country List mode (COUNTRY LIST).**

2. **Select the country group containing the country you are currently in to the following order:**

COUNTRY1 ↔ COUNTRY2 ↔ COUNTRY3 ↔ COUNTRY4

Country Group List and Channel Name

Country group	Display (Country name)		
COUNTRY1 (CCIR Channel)	D (GERMANY) B (BELGIUM) N (NORWAY) IS (ICELAND) BIH (BOSNIA) GR (GREECE) A (AUSTRIA) TU (TUNISIA)	NL (NETHERLANDS) P (PORTUGAL) S (SWEDEN) SLO (SLOVENIA) YU (YUGOSLAVIA) TR (TURKEY) HR (CROATIA)	E (SPAIN) DK (DENMARK) FIN (FINLAND) CH (SWITZERLAND) AL (ALBANIA) M (MALTA) MKD (MACEDONIA)
COUNTRY2 (ITALY Channel)	I (ITALY)	RSM (REPUBLIC OF SAN MARINO)	
COUNTRY3 (U.K. Channel)	GB (U.K.)	IRL (IRELAND)	
COUNTRY4 (OIRT Channel)	RUS (RUSSIA) BG (BULGARIA)	H (HUNGARY) PL (POLAND)	CZ (CZECH) SLK (SLOVAKIA)

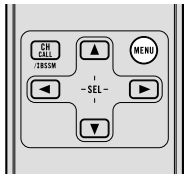
Note:

- You can use BSSM and other methods to memorize broadcast stations in each of the Country groups.
- This product is not compatible with channels in France.
- Broadcast channels and broadcast systems may vary from country to country. If reception is not possible with the appropriate country group listed above, try reception using another country group.
- When using with the AVH-P6400CD or AVH-P6400R, please read the AV Receiver's Operation Manual.

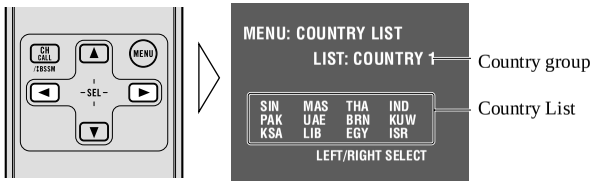
Selecting the Country Group

In this product, channels are preset for each country group. Selecting the appropriate country group for your reception area enables reception of multiple channels.

1. **Press the MENU button on the remote control and select the Country List mode (COUNTRY LIST).**



2. **Select the country group containing the country you are currently in to the following order.**



COUNTRY1 ↔ COUNTRY2 ↔ COUNTRY3 ↔ COUNTRY4 ↔ COUNTRY5 ↔ COUNTRY6

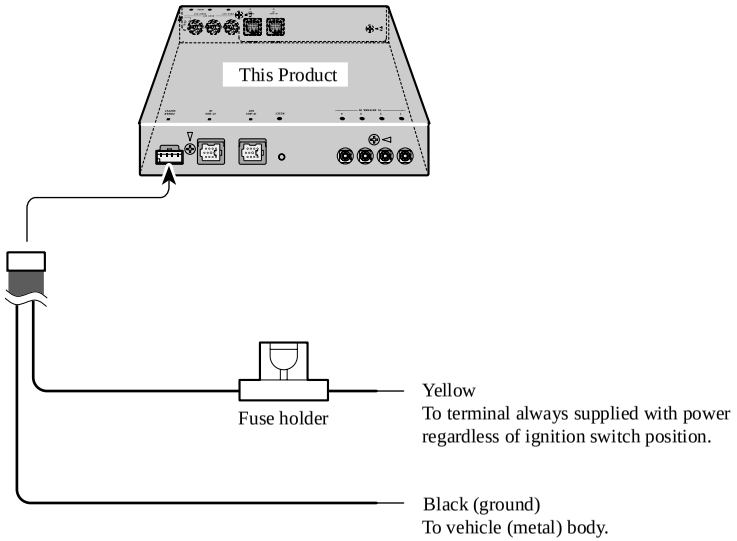
Country Group List and Channel Name

Country group	Display (Country name)		
COUNTRY1 (CCIR Channel)	SIN (SINGAPORE) IND (INDIA) BRN (BAHRAIN) LIB (LIBYA)	MAS (MALAYSIA) PAK (PAKISTAN) KUW (KUWAIT) EGY (EGYPT)	THA (THAILAND) UAE (UAE) KSA (SAUDI ARABIA) ISR (ISRAEL)
COUNTRY2 (IN Channel)	INA (INDONESIA)		
COUNTRY3 (CHN Channel)	CHN (CHINA)		
COUNTRY4 (U.K. Channel)	HKG (HONG KONG)		
COUNTRY5 (OIRT Channel)	CIS (CIS)		
COUNTRY6 (AUSTRALIA Channel)	AUS (AUSTRALIA)		

Note:

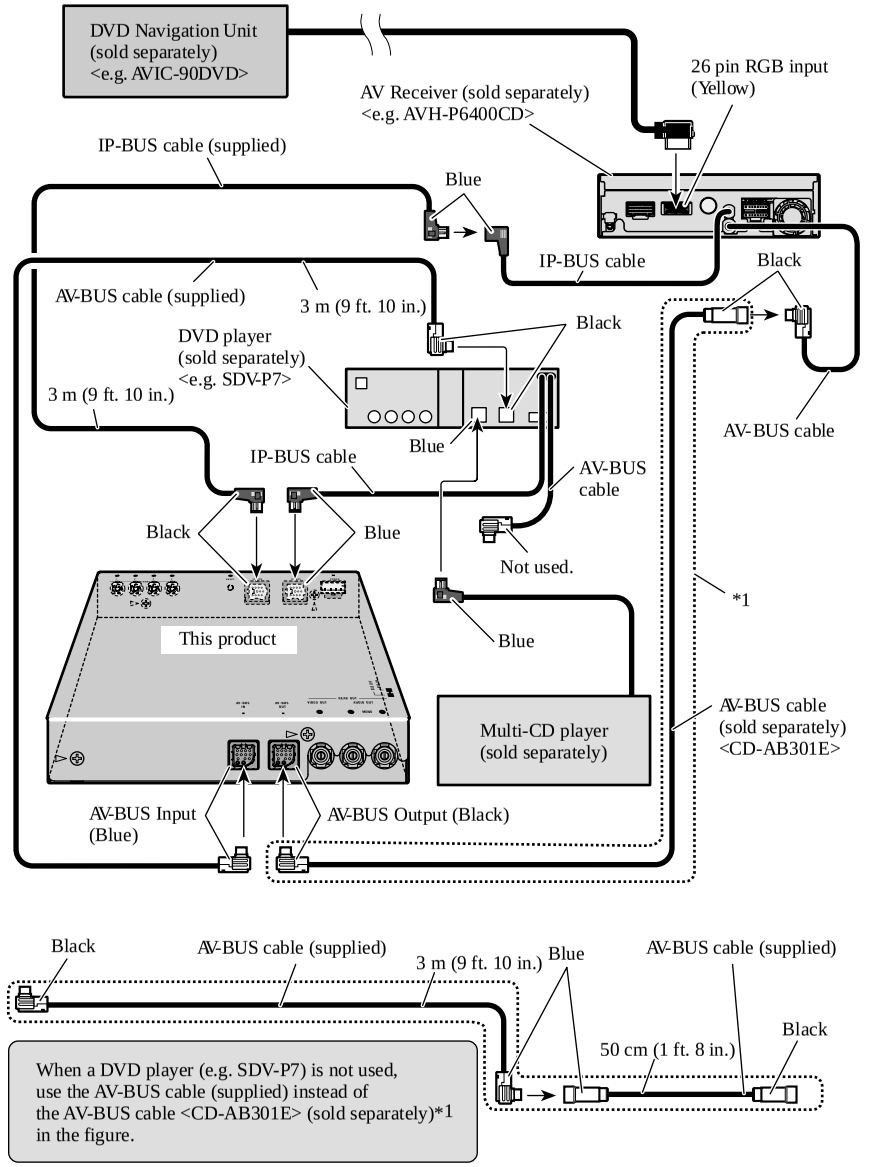
- You can use BSSM and other methods to memorize broadcast stations in each of the Country groups.
- Broadcast channels and broadcast systems may vary from country to country. If reception is not possible with the appropriate country group listed above, try reception using another country group.
- When using with the AVH-P6450CD or AVH-P6450, please read the AV Receiver's Operation Manual.

Connecting the Power cord



Connection Diagram

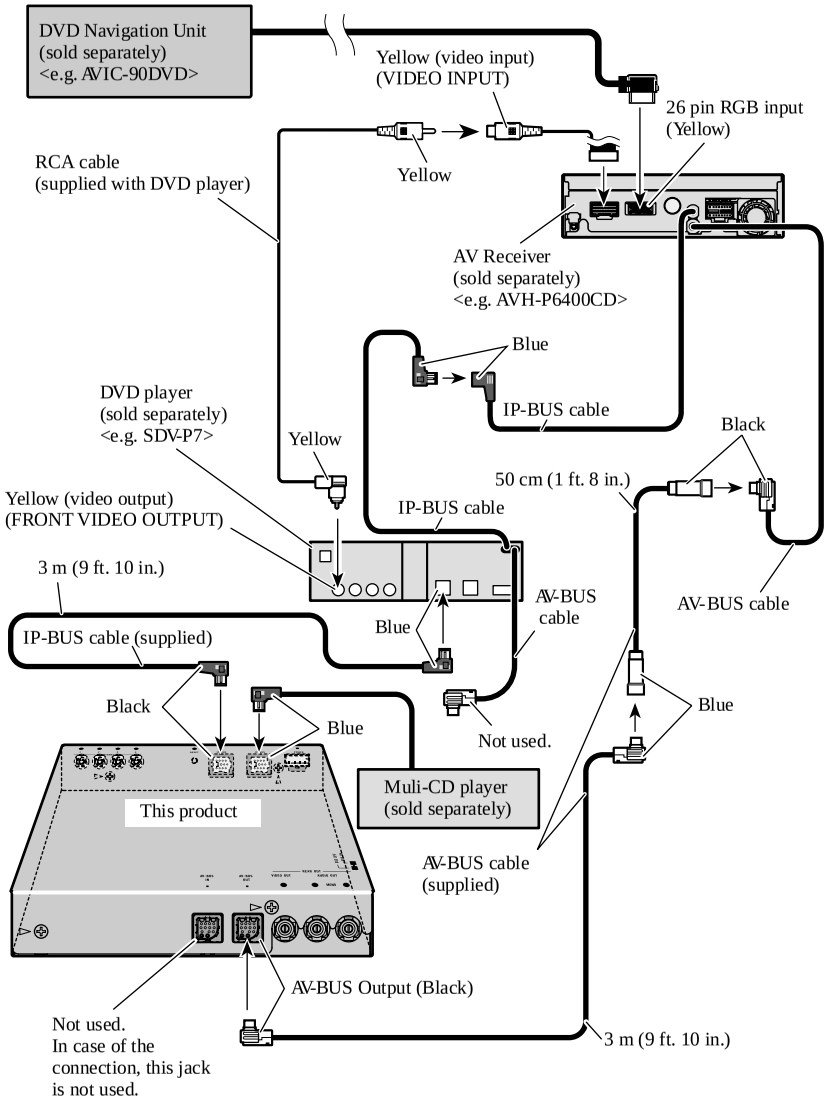
■ When connecting AV Receiver (A)



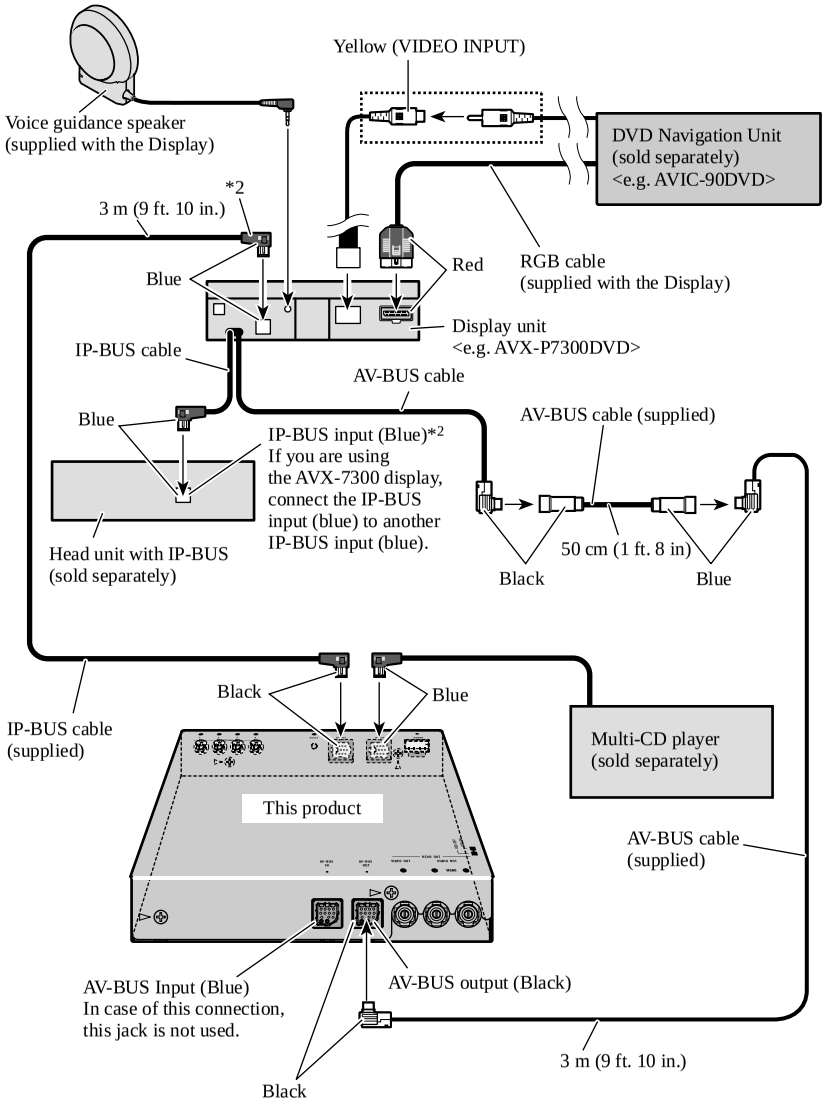
When a DVD player (e.g. SDV-P7) is not used, use the AV-BUS cable (supplied) instead of the AV-BUS cable <CD-AB301E> (sold separately)*1 in the figure.

■ When connecting AV Receiver (B)

Use this connection when installing both an AV receiver and a DVD player in the console.

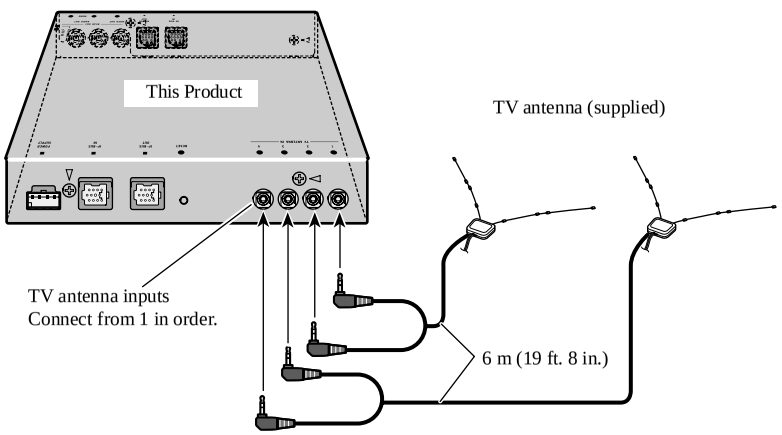


■ When connecting the Display Unit



TV Antenna Connection

■ When connecting the TV Antenna (supplied)



Rear Display Connection

Note:

- Output to this product's Rear Display is always ON regardless of whether the Head Unit is ON/OFF, or the selected source.
  Also, if the Head Unit's source is anything other than TV, channel changing and other independent operations are possible for the Rear Display.
- Output from this product's rear audio output is monaural.

■ When connecting the External video components