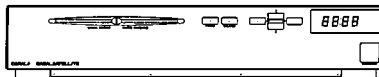


Service Manual

Pioneer



ORDER NO.
ARP3079

CANAL PLUS TUNER

TS5

BCT-1510

BCT-1520

BCT-1530

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

| Type | Model | | | | Power Requirement | Remarks |
|----------|-------|----------|----------|----------|-------------------|---------|
| | TS5 | BCT-1510 | BCT-1520 | BCT-1530 | | |
| NYXK/FR | ○ | - | - | - | AC230V | |
| NYXK/FR1 | ○ | - | - | - | AC230V | |
| NYXK/FR2 | ○ | - | - | - | AC230V | |
| NYXK/FR3 | ○ | - | - | - | AC230V | |
| NYXK/SP | - | ○ | - | - | AC230V | |
| NYXK/IT | - | - | ○ | - | AC230V | |
| NYWXKPL | - | - | - | ○ | AC230V | |

CONTENTS

| | | | |
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| 3. SCHEMATIC DIAGRAM | 8 | 7.1 IC | 37 |
| 4. PCB CONNECTION DIAGRAM | 28 | 8. PANEL FACILITIES AND SPECIFICATIONS | 60 |
| 5. PCB PARTS LIST | 34 | | |

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS SERVICE, 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
 © PIONEER CORPORATION 2000

1. SAFETY INFORMATION

This service manual is intended for qualified service technicians ; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.



WARNING

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

Health & Safety Code Section 25249.6 – Proposition 65



NOTICE

(FOR CANADIAN MODEL ONLY)

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

REMARQUE

(POUR MODÈLE CANADIEN SEULEMENT)

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

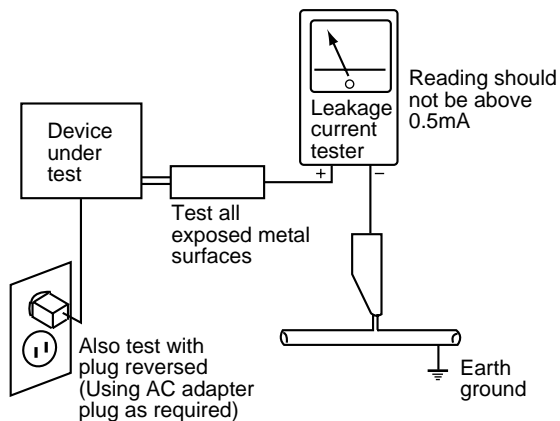
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

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

LEAKAGE CURRENT CHECK

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



AC Leakage Test

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

2. PRODUCT SAFETY NOTICE

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

Electrical components having such features are identified by marking with a Δ on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

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

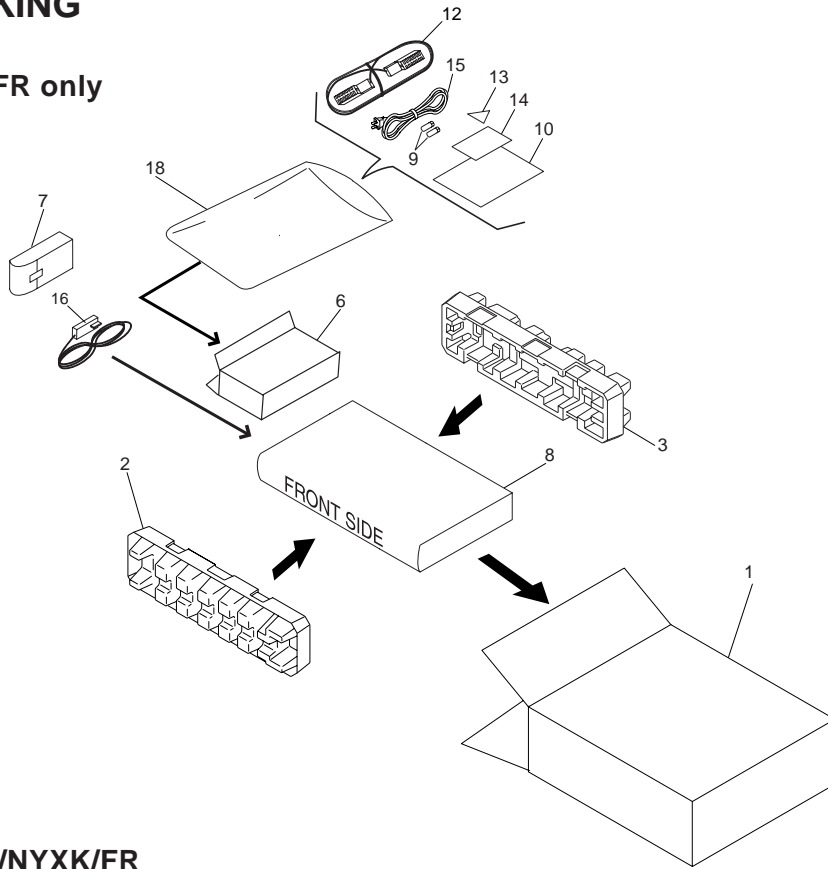
**TS5, BCT-1510, BCT-1520,
BCT-1530**

2. EXPLODED VIEWS AND PARTS LIST

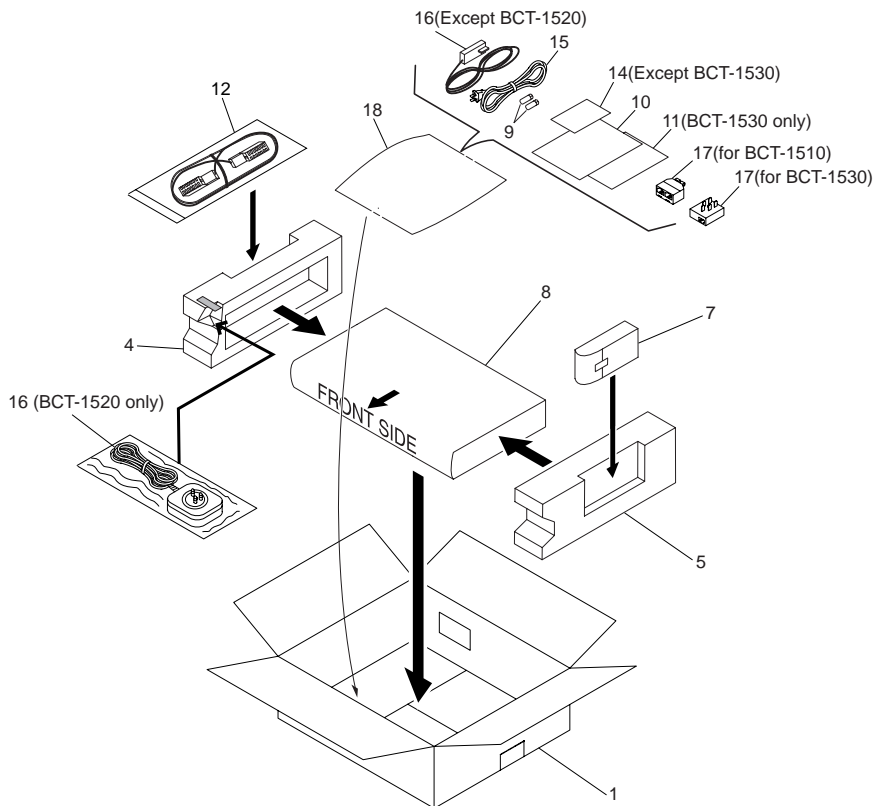
- NOTES:**
- Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
 - The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
 - Screws adjacent to ∇ mark on the product are used for disassembly.

2.1 PACKING

TS5/NYXK/FR only



Except TS5/NYXK/FR



(1) PACKING PARTS LIST

| Mark | No. | Description | Part No. |
|------|-----|--------------------------|-----------------------|
| | 1 | Packing Case | See Contrast Table(2) |
| | 2 | Pulp Mold Pad F | See Contrast Table(2) |
| | 3 | Pulp Mold Pad R | See Contrast Table(2) |
| | 4 | Side Pad L | See Contrast Table(2) |
| | 5 | Side Pad R | See Contrast Table(2) |
| | 6 | Sub Packing Case | See Contrast Table(2) |
| | 7 | Remote Control Unit | See Contrast Table(2) |
| | 8 | Sheet | AHG1153 |
| | 9 | Battery (R03) 2P | VEM1018 |
| | 10 | Instruction Manual | See Contrast Table(2) |
| | 11 | Instruction Manual 2 | See Contrast Table(2) |
| | 12 | Scart Cable(1m:Black) | See Contrast Table(2) |
| NSP | 13 | Sticker | See Contrast Table(2) |
| NSP | 14 | Modem Approval Sheet | See Contrast Table(2) |
| △ | 15 | AC Power Cord (2m:Black) | BDG1035 |
| | 16 | Modem Cable (10m:White) | See Contrast Table(2) |
| NSP | 17 | Modem Adapter | See Contrast Table(2) |
| NSP | 18 | Catalogue Bag | BHG1047 |

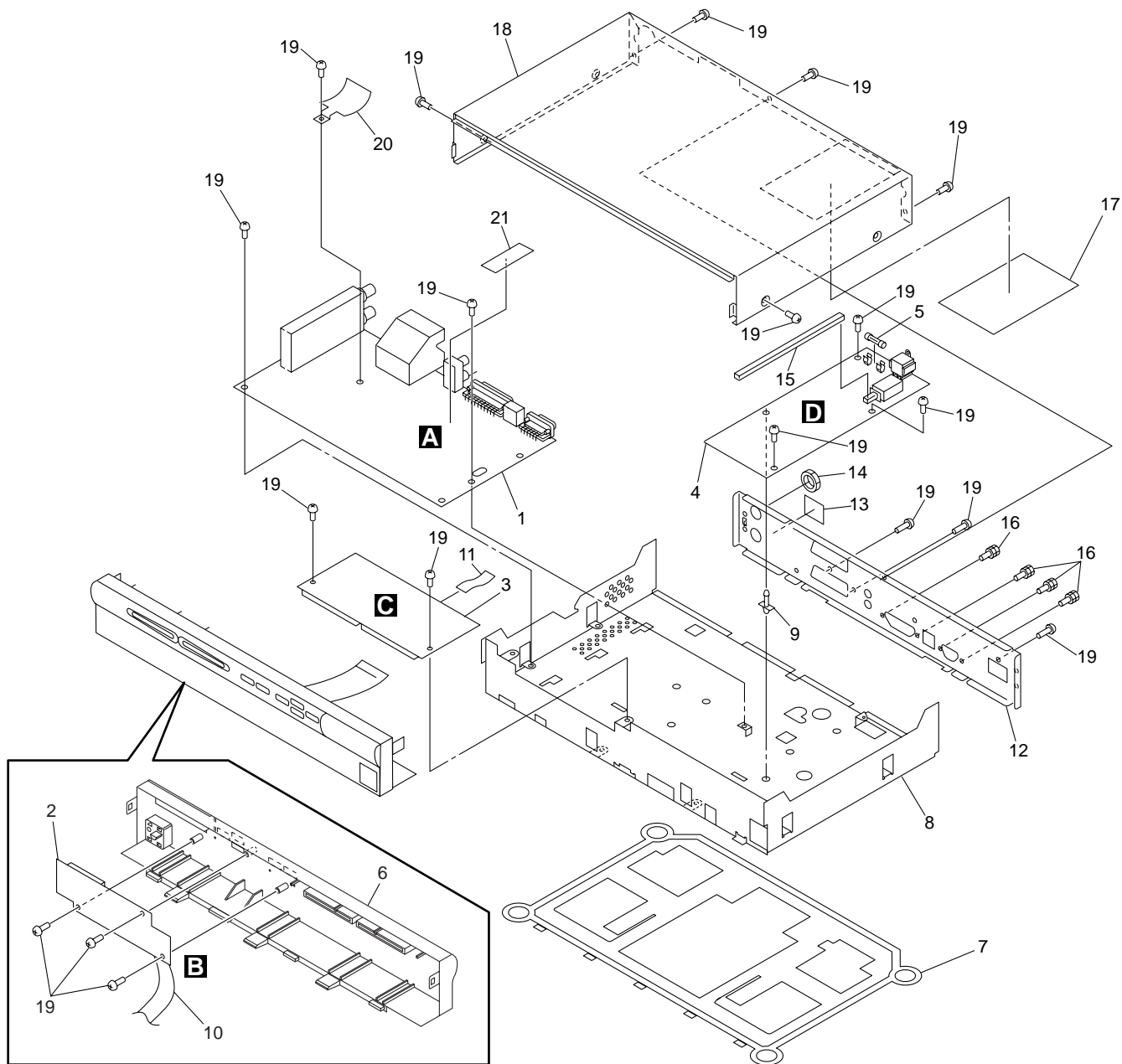
(2) CONTRAST TABLE

TS5/NYXK/FR, TS5/NYXK/FR1, TS5/NYXK/FR2, TS5/NYXK/FR3, BCT-1510/NYXK/SP, BCT-1520/NYXK/IT and BCT-1530/NYWXKPL are constructed the same except for the following:

| Mark | No. | Symbol and Description | Part No. | | | | | | Remarks | |
|------|-----|-------------------------------|-----------------|------------------|------------------|------------------|----------------------|----------------------|----------|----------------------|
| | | | TS5 /NYXK/FR | TS5 /NYXK/FR1 | TS5 /NYXK/FR2 | TS5 /NYXK/FR3 | BCT-1510 /NYXK/SP | BCT-1520 /NYXK/IT | | BCT-1530 /NYWXKPL |
| | 1 | Packing Case | BHD1489 | BHD1369 | BHD1369 | BHD1369 | BHD1375 | BHD1480 | BHD1442 | |
| | 2 | Pulp Mold Pad F | BHX1028 | Not used | Not used | Not used | Not used | Not used | Not used | |
| | 3 | Pulp Mold Pad R | BHX1029 | Not used | Not used | Not used | Not used | Not used | Not used | |
| | 4 | Side Pad L | Not used | BHA1146 | BHA1146 | BHA1146 | BHA1146 | BHA1146 | BHA1146 | |
| | 5 | Side Pad R | Not used | BHA1147 | BHA1147 | BHA1147 | BHA1147 | BHA1147 | BHA1147 | |
| | 6 | Sub Packing Case | BHB1036 | Not used | Not used | Not used | Not used | Not used | Not used | |
| | 7 | Remote Control Unit | BXD1010 | BXD1010 | BXD1010 | BXD1010 | BXD1016 | BXD1018 | BXD1037 | |
| | 10 | Instruction Manual (French) | BRC1030 | BRC1021 | BRC1022 | BRC1026 | Not used | Not used | Not used | |
| | 10 | Instruction Manual (Spanish) | Not used | Not used | Not used | Not used | BRC1004 | Not used | Not used | |
| | 10 | Instruction Manual (Italian) | Not used | Not used | Not used | Not used | Not used | BRC1027 | Not used | |
| | 10 | Instruction Manual (Polish) | Not used | Not used | Not used | Not used | Not used | Not used | BRC1011 | |
| | 11 | Instruction Manual 2 (Polish) | Not used | Not used | Not used | Not used | Not used | Not used | BRC1012 | |
| | 12 | Scart Cable | BDH1018 | BDH1027 | BDH1027 | BDH1027 | BDH1018 | BDH1018 | BDH1018 | |
| NSP | 13 | Sticker | BAX1271 | Not used | Not used | Not used | Not used | Not used | Not used | |
| NSP | 14 | Modem Approval Sheet | BRM1034 | BRM1034 | BRM1034 | BRM1034 | BRM1035 | BRM1036 | Not used | |
| | 16 | Modem Cable | BDH1014 | BDH1014 | BDH1014 | BDH1014 | BDH1015 | BDH1016 | BDH1015 | |
| NSP | 17 | Modem Adapter | Not used | Not used | Not used | Not used | BKP1124 | Not used | BKP1130 | |

TS5, BCT-1510, BCT-1520, BCT-1530

2.2 EXTERIOR SECTION



(1) EXTERIOR SECTION PARTS LIST

| Mark | No. | Description | Part No. |
|------|-----|-------------------------|------------------------|
| | 1 | MAIN ASSY(FRANCE) | See Contrast Table (2) |
| | 2 | FRONT ASSY | BWE1102 |
| | 3 | CARD ASSY | BWE1080 |
| △ | 4 | POWER ASSY | BXF1139 |
| △ | 5 | Fuse (0109: T2.5AH250V) | REK1102 |
| | 6 | Front Panel Assy | See Contrast Table (2) |
| | 7 | Plastic Base | BMA1002 |
| | 8 | Chassis | BNA1151 |
| | 9 | PCB Support | AEC1215 |
| | 10 | 21P FFC(J1) | BDD1042 |
| | 11 | 12P FFC(J2) | BDD1022 |
| | 12 | Rear Panel Assy | See Contrast Table (2) |
| NSP | 13 | Name Label | See Contrast Table (2) |
| | 14 | Washer Faced Nut | BBN1005 |
| | 15 | Joint | BMR1133 |
| | 16 | Hexagon Headed screw | BBA1059 |
| | 17 | Barrier | BEC1231 |
| | 18 | Bonnet Case | See Contrast Table (2) |
| | 19 | Screw | BBZ30P080FZK |
| | 20 | Heat Sink | BNH1049 |
| | 21 | Serial No. Label | See Contrast Table (2) |

(2) CONTRAST TABLE

TS5/NYXK/FR, TS5/NYXK/FR1, TS5/NYXK/FR2, TS5/NYXK/FR3, BCT-1510/NYXK/SP, BCT-1520/NYXK/IT and BCT-1530/NYWXKPL are constructed the same except for the following:

| Mark | No. | Symbol and Description | Part No. | | | | | | Remarks | |
|------|-----|------------------------|-----------------|------------------|------------------|------------------|----------------------|----------------------|---------|----------------------|
| | | | TS5 /NYXK/FR | TS5 /NYXK/FR1 | TS5 /NYXK/FR2 | TS5 /NYXK/FR3 | BCT-1510 /NYXK/SP | BCT-1520 /NYXK/IT | | BCT-1530 /NYWXKPL |
| NSP | 1 | MAIN ASSY | BWE1103 | BWE1103 | BWE1103 | BWE1103 | BWE1115 | BWE1115 | BWE1110 | |
| | 6 | Front Panel Assy | BWX1144 | BWX1144 | BWX1144 | BWX1144 | BWX1145 | BWX1191 | BWX1146 | |
| | 12 | Rear Panel Assy | BWX1168 | BWX1168 | BWX1168 | BWX1168 | BWX1169 | BWX1170 | BWX1171 | |
| | 13 | Name Label | BAL1400 | BAL1414 | BAL1415 | BAL1416 | BAL1401 | BAL1402 | BAL1403 | |
| | 18 | Bonnet Case | BNE1120 | BNE1120 | BNE1120 | BNE1120 | BNE1120 | BNE1122 | BNE1120 | |
| | 21 | Serial No. Label | BAX1145 | BAX1145 | BAX1145 | BAX1145 | BAX1181 | BAX1189 | BAX1250 | |

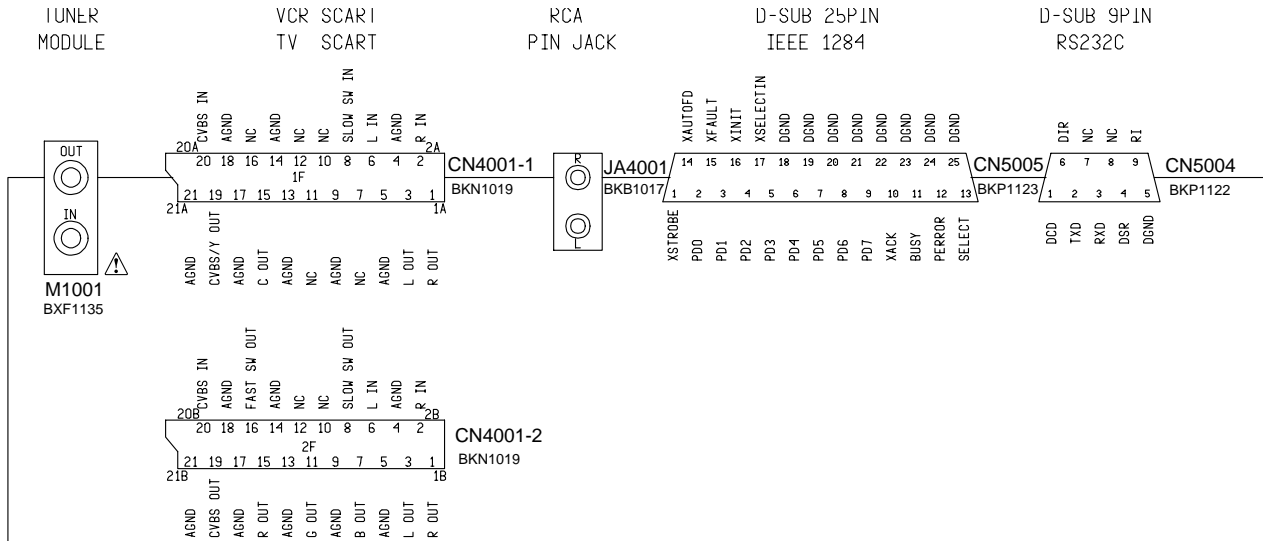
1 2 3 4

TS5, BCT-1510, BCT-1520, BCT-1530

3. SCHEMATIC DIAGRAM

3.1 OVERALL WIRING DIAGRAM

A



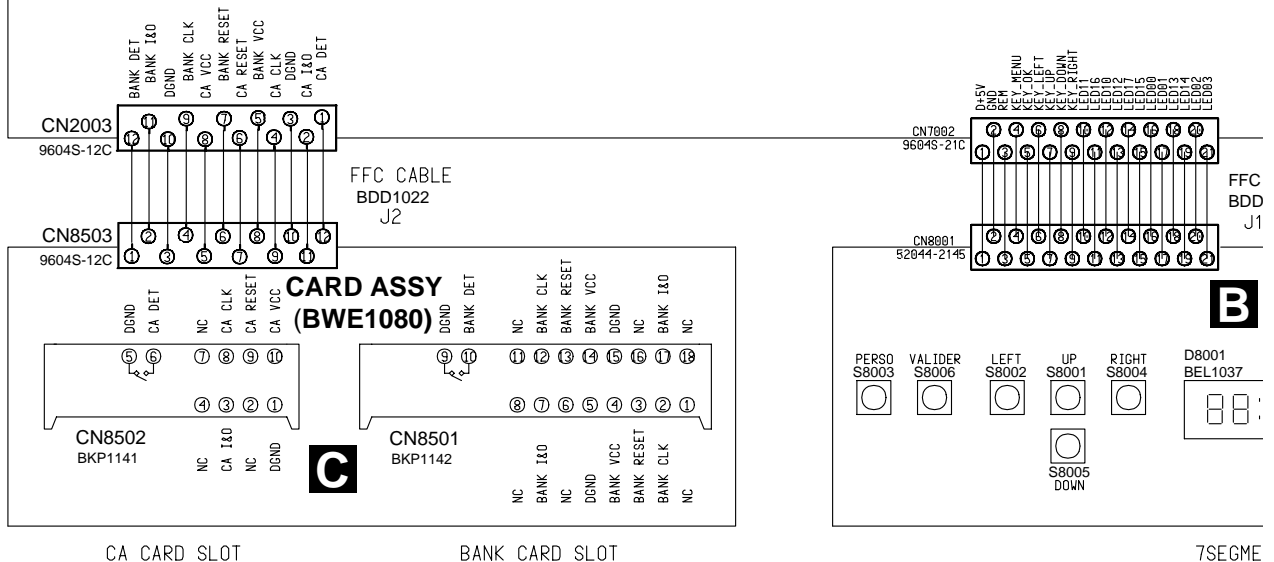
B

A (A1/7-A7/7) MAIN ASSY

- (TS5 : BWE1103)
- (BCT-1510 : BWE1115)
- (BCT-1520 : BWE1115)
- (BCT-1530 : BWE1110)

- CHDEC BLOCK : B1E1103
- DMXCPU BLOCK : B2E1103
- MEMORY BLOCK : B3E1103
- ANALOG AV BLOCK : B4E1103
- IO BLOCK : B5E1103
- MODEM BLOCK : B6E1103
- SUBPOWER BLOCK : B7E1103

C



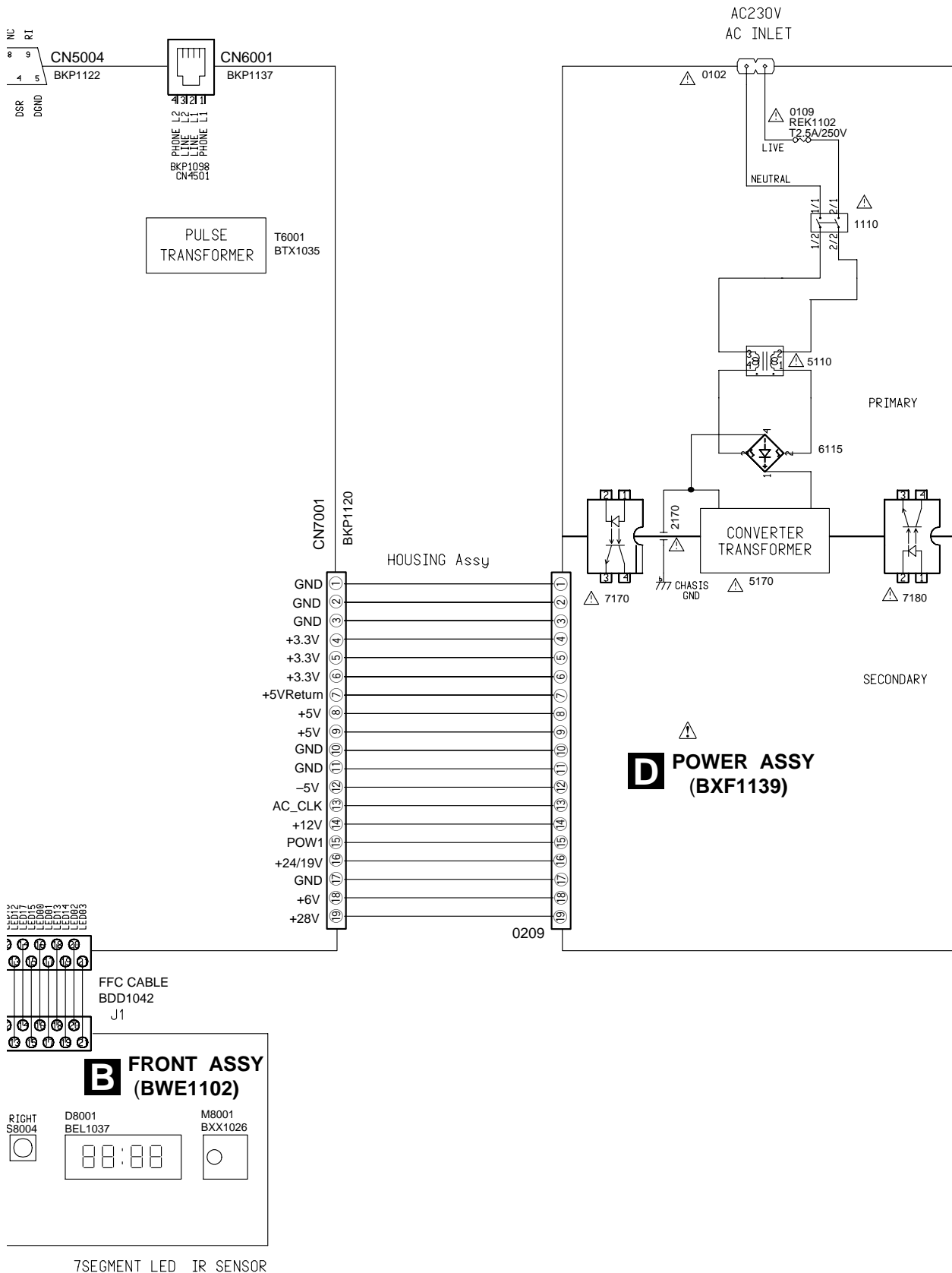
D

TS5, BCT-1510, BCT-1520, BCT-1530

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

9PIN
2C

MODULAR JACK

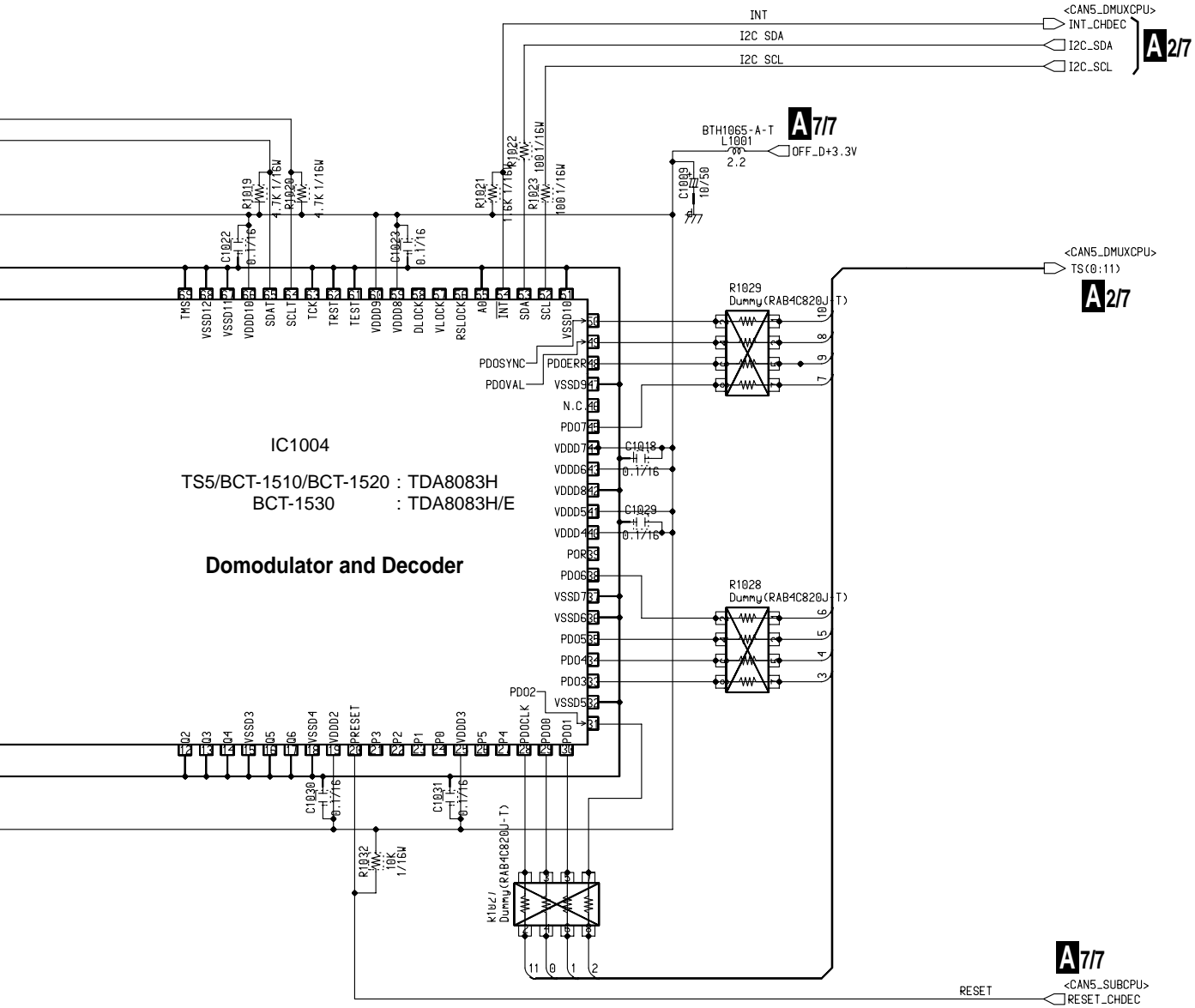


A

B

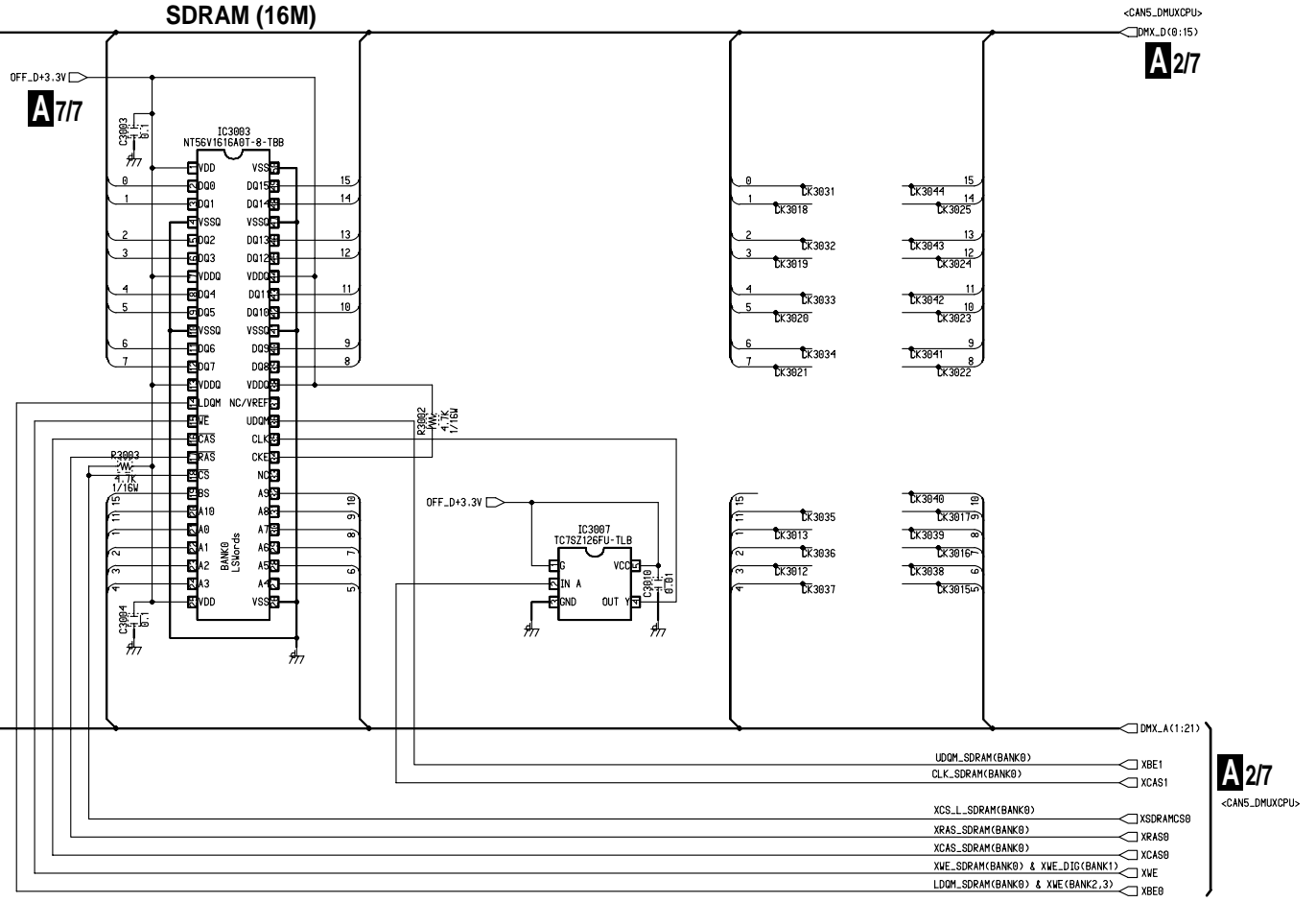
C

D



LNB_POW0 { Low: LNB OFF (External)
High: LNB ON (Internal)

LNB_POW1 { Low: LNB V(13V)
High: LNB H(18V)



A7/7

A2/7

A2/7

A3/7

TS5, BCT-1510, BCT-1520, BCT-1530

3.5 MAIN ASSY (4/7)

A 4/7 MAIN ASSY (4/7)

- ANALOG AV BLOCK (BCT-1530)

| | | |
|-----------|---|----------|
| (TS5 | : | BWE1103) |
| (BCT-1510 | : | BWE1115) |
| (BCT-1520 | : | BWE1115) |
| (BCT-1530 | : | BWE1110) |

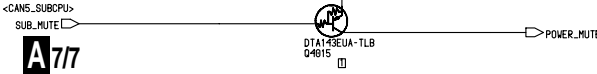
A

MUTE

A717

MUTE_+5V

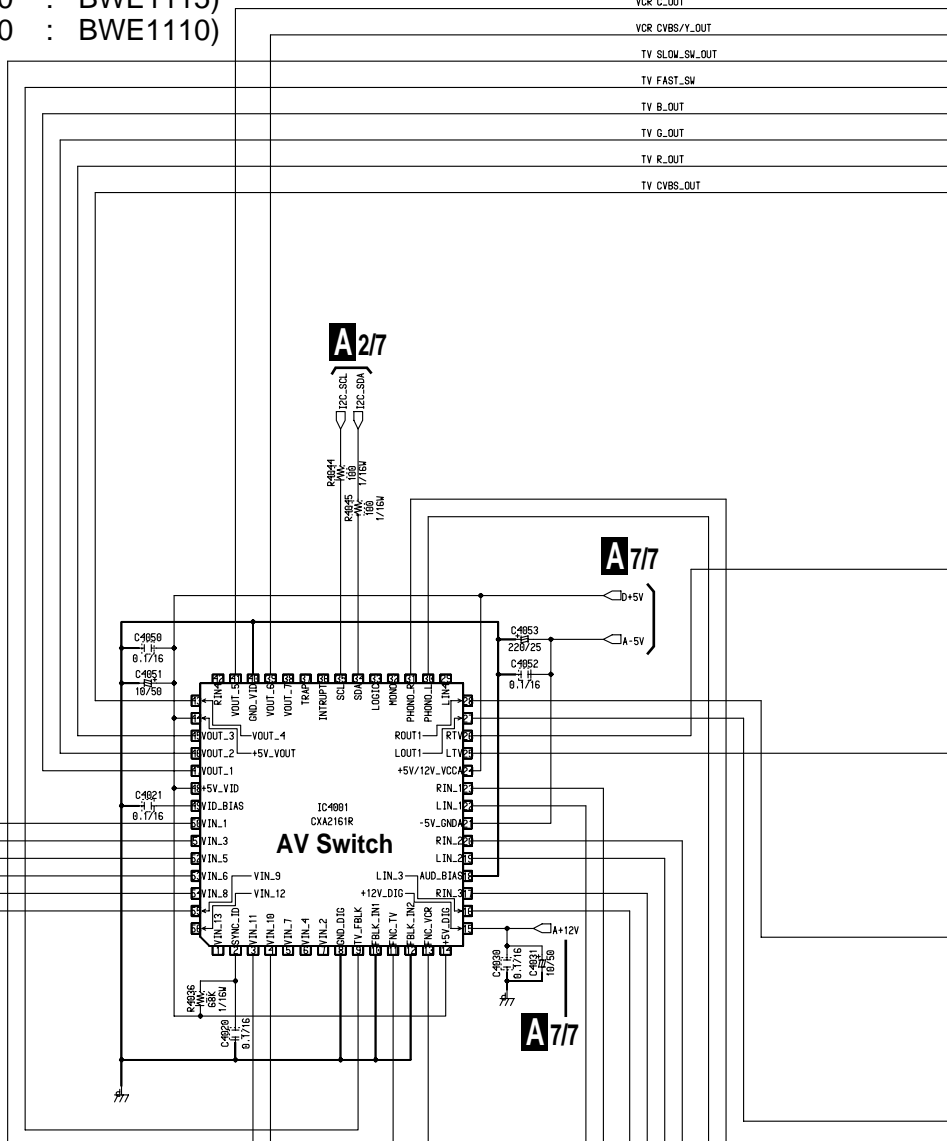
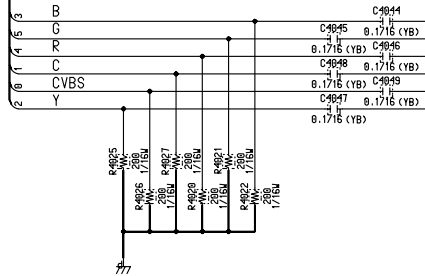
DT1A13EUA-TLB
04815



B

<CAN5_DMUXCPU>
Video(0:5)

A217



C

A717

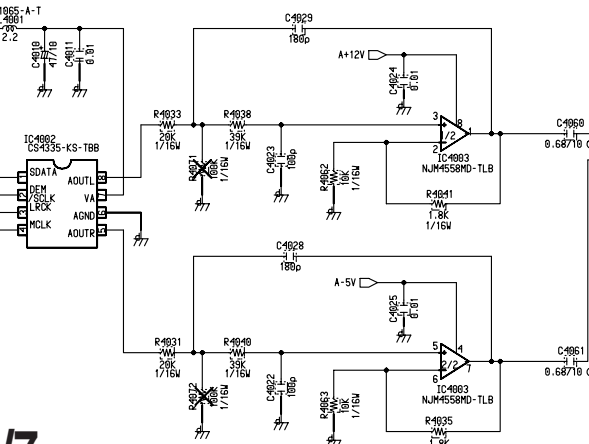
OFF_D+5V

<CAN5_DMUXCPU>
Audio(0:4)

A217

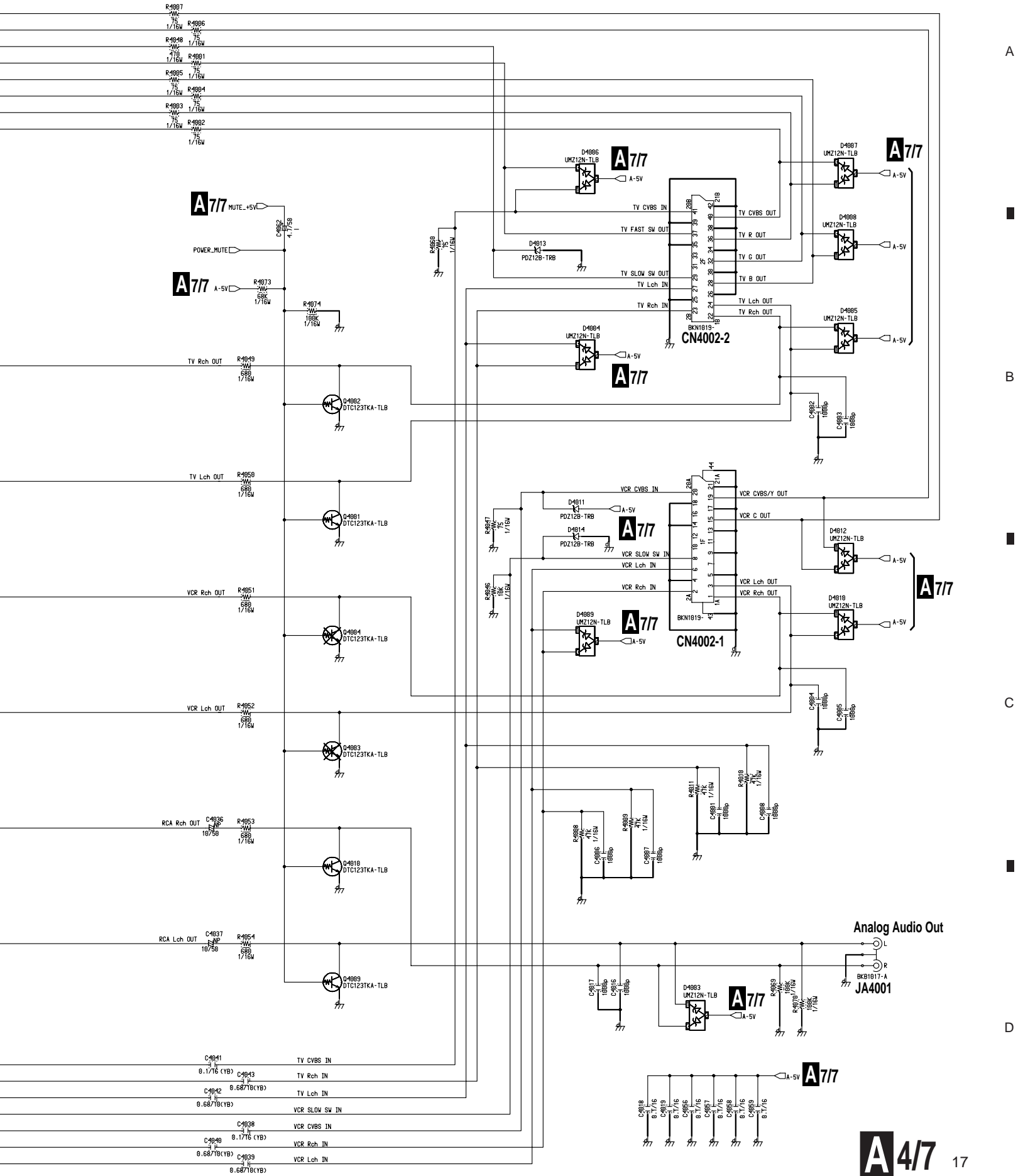
<CAN5_SUBCPU>
OFF_D+5V

A717



D

TS5, BCT-1510, BCT-1520, BCT-1530



TS5, BCT-1510, BCT-1520, BCT-1530

3.6 MAIN ASSY (5/7)

A

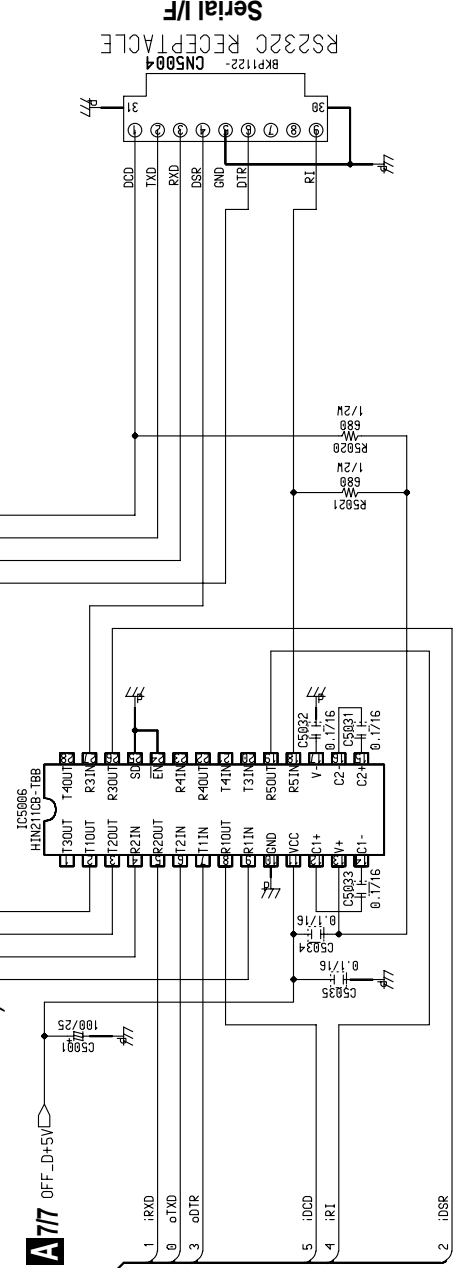
B

C

D

- (TS5 : BWE1103)
 - (BCT-1510 : BWE1115)
 - (BCT-1520 : BWE1115)
 - (BCT-1530 : BWE1110)
- IO BLOCK

RS-232C Driver



1 2 3 4

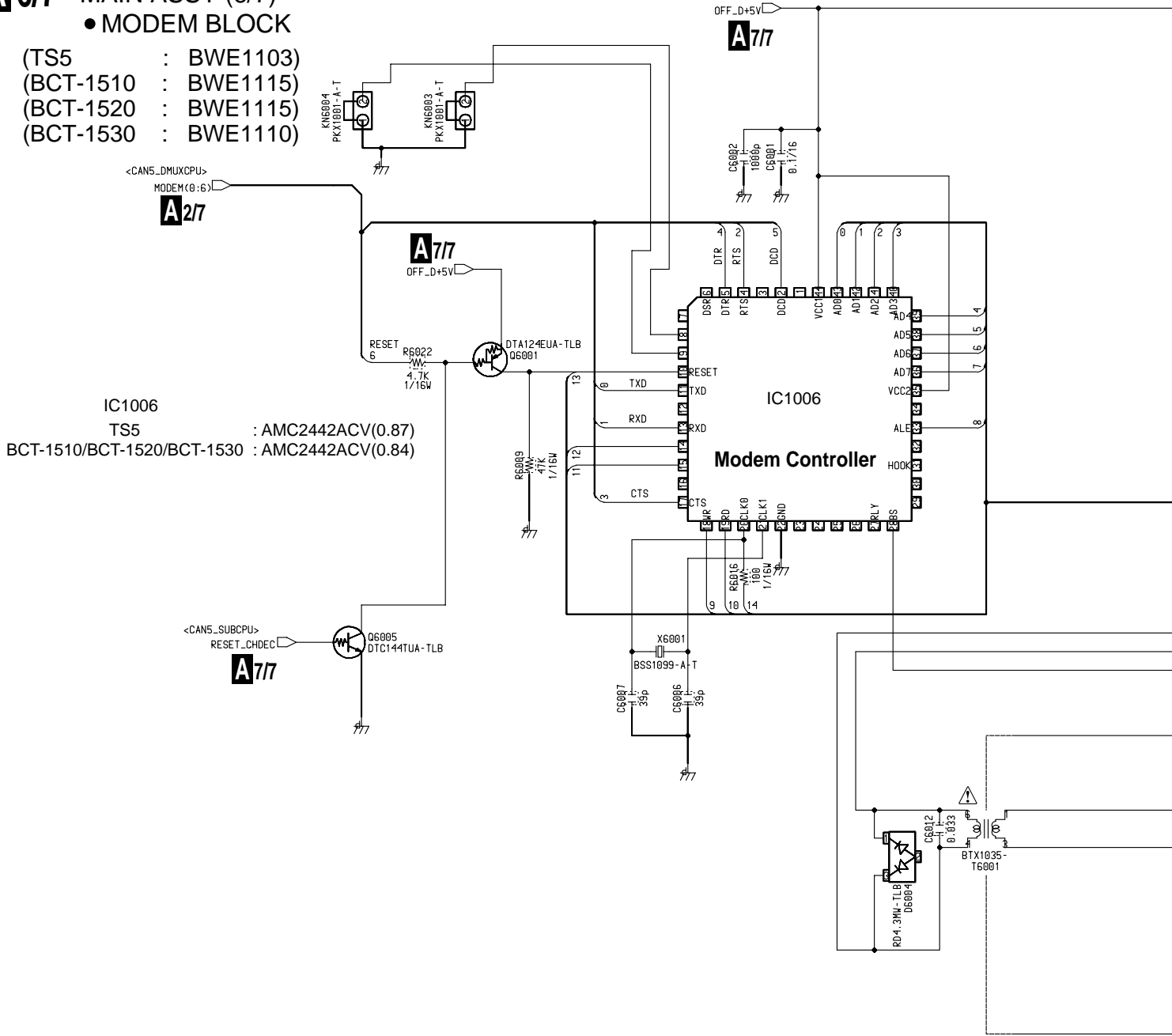
TS5, BCT-1510, BCT-1520, BCT-1530

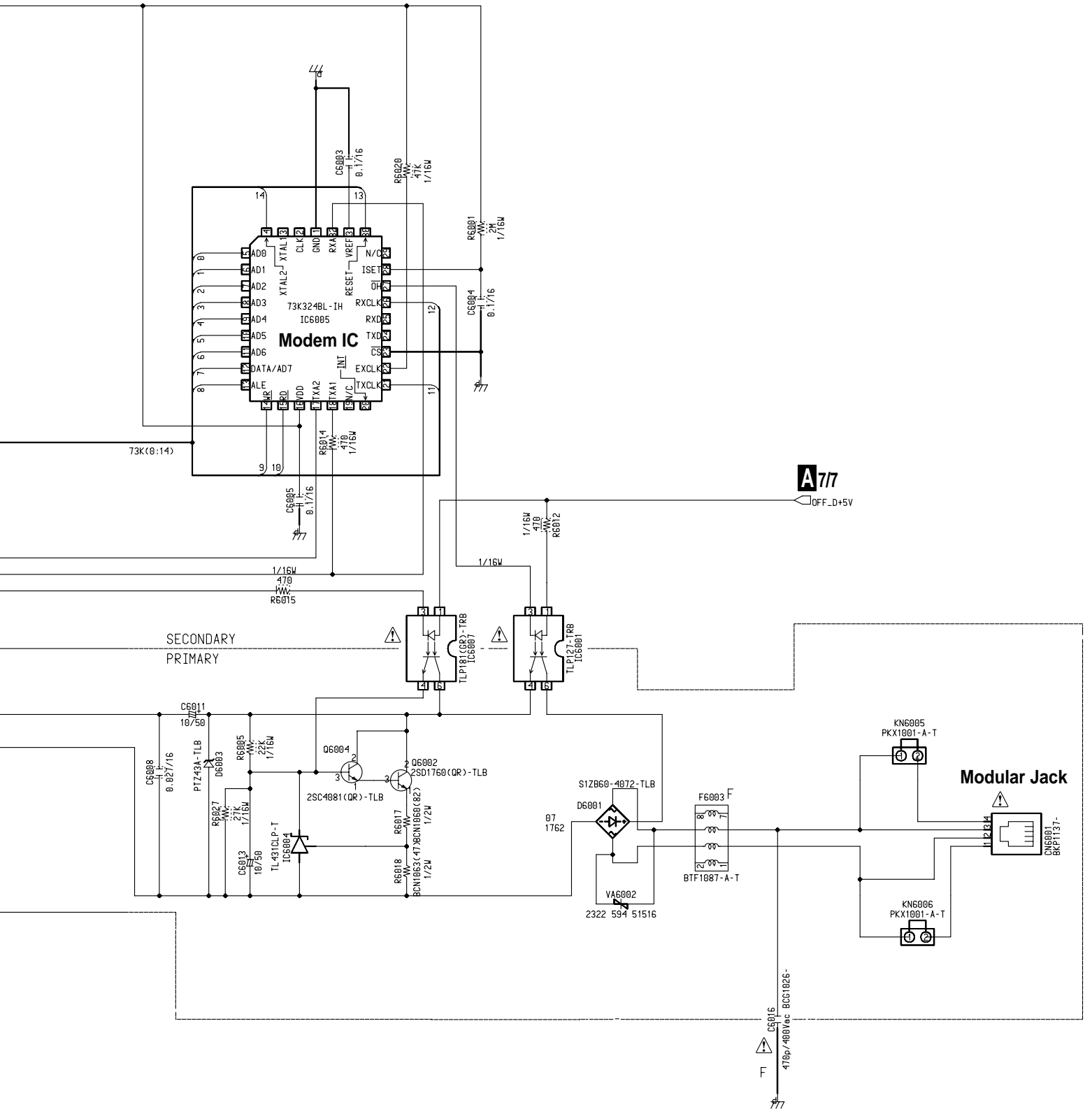
3.7 MAIN ASSY (6/7)

A 6/7 MAIN ASSY (6/7)

• MODEM BLOCK

- (TS5 : BWE1103)
- (BCT-1510 : BWE1115)
- (BCT-1520 : BWE1115)
- (BCT-1530 : BWE1110)





A717
OFF_D+5V

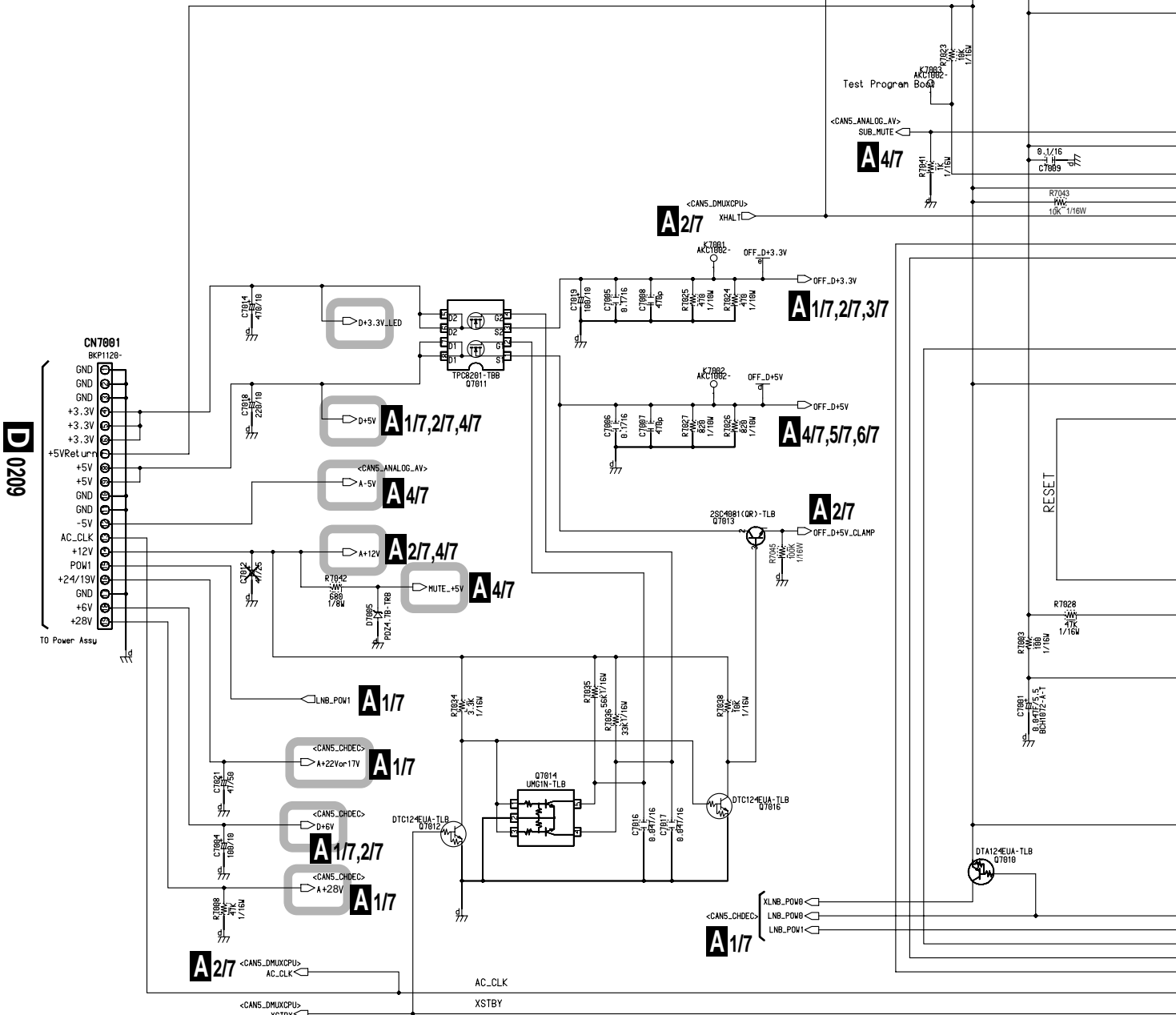
Modular Jack

TS5, BCT-1510, BCT-1520, BCT-1530

3.8 MAIN ASSY (7/7)

A7/7 MAIN ASSY (7/7) • SUBPOWER BLOCK

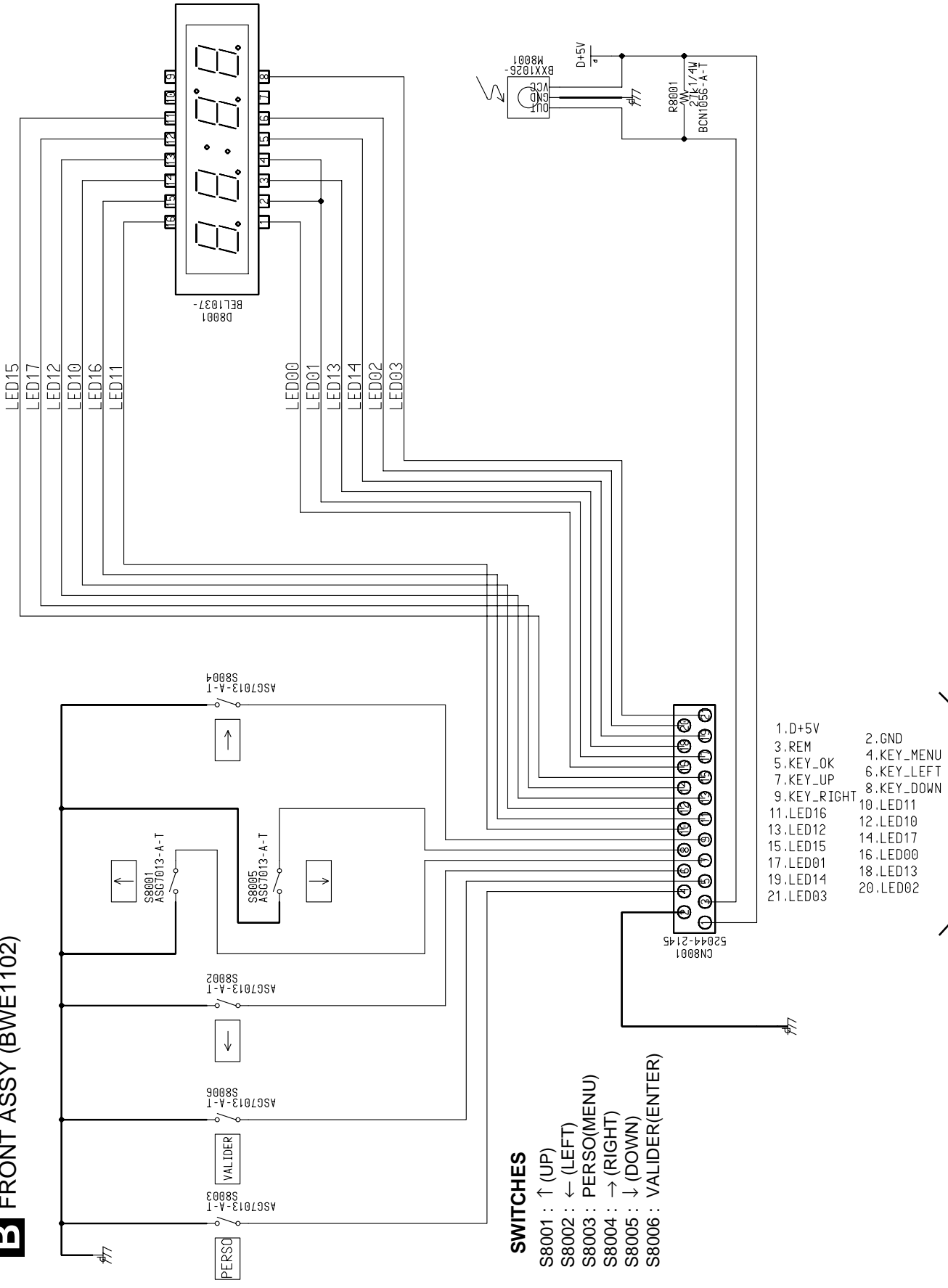
- (TS5 : BWE1103)
- (BCT-1510 : BWE1115)
- (BCT-1520 : BWE1115)
- (BCT-1530 : BWE1110)



DTA124EUA-TLB:R1,R2=22kohn
 DTC124EUA-TLB:R1,R2=22kohn
 DTB113ZK-TLB:R1=1kohn,R2=10kohn
 BTH1065-A-T.L=2.2uH

TS5, BCT-1510, BCT-1520, BCT-1530

3.9 FRONT ASSY



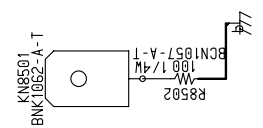
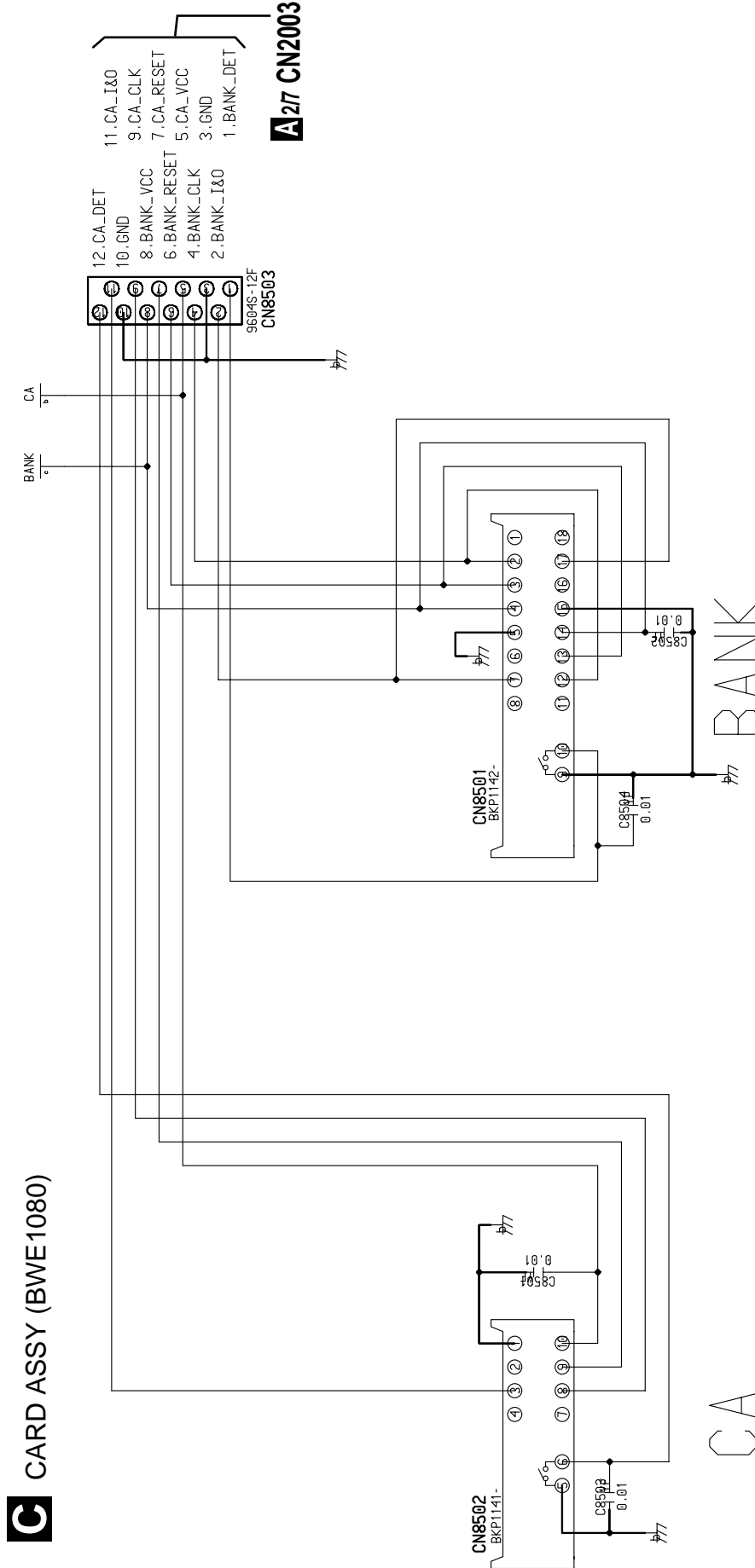
- SWITCHES**
- S8001 : ↑ (UP)
 - S8002 : ← (LEFT)
 - S8003 : PERSO(MENU)
 - S8004 : → (RIGHT)
 - S8005 : ↓ (DOWN)
 - S8006 : VALIDER(ENTER)

- 1.D+5V
- 2.GND
- 3.REM
- 4.KEY_MENU
- 5.KEY_OK
- 6.KEY_LEFT
- 7.KEY_UP
- 8.KEY_DOWN
- 9.KEY_RIGHT
- 10.LED11
- 11.LED16
- 12.LED10
- 13.LED12
- 14.LED17
- 15.LED15
- 16.LED00
- 17.LED01
- 18.LED13
- 19.LED14
- 20.LED02
- 21.LED03

A77 CN7002

B FRONT ASSY (BWE1102)

3.10 CARD ASSY



TS5, BCT-1510, BCT-1520, BCT-1530

4. PCB CONNECTION DIAGRAM

4.1 FRONT ASSY

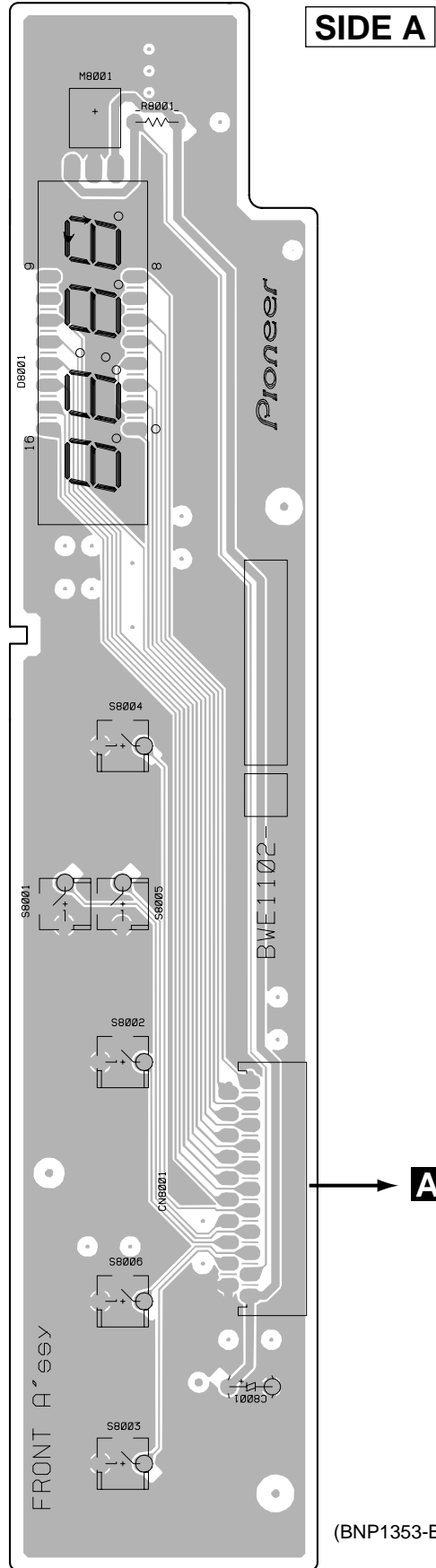
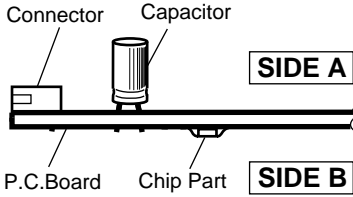
B FRONT ASSY

NOTE FOR PCB DIAGRAMS :

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

| Symbol In PCB Diagrams | Symbol In Schematic Diagrams | Part Name |
|------------------------|------------------------------|--------------------------|
| | | Transistor |
| | | Transistor with resistor |
| | | Field effect transistor |
| | | Resistor array |
| | | 3-terminal regulator |

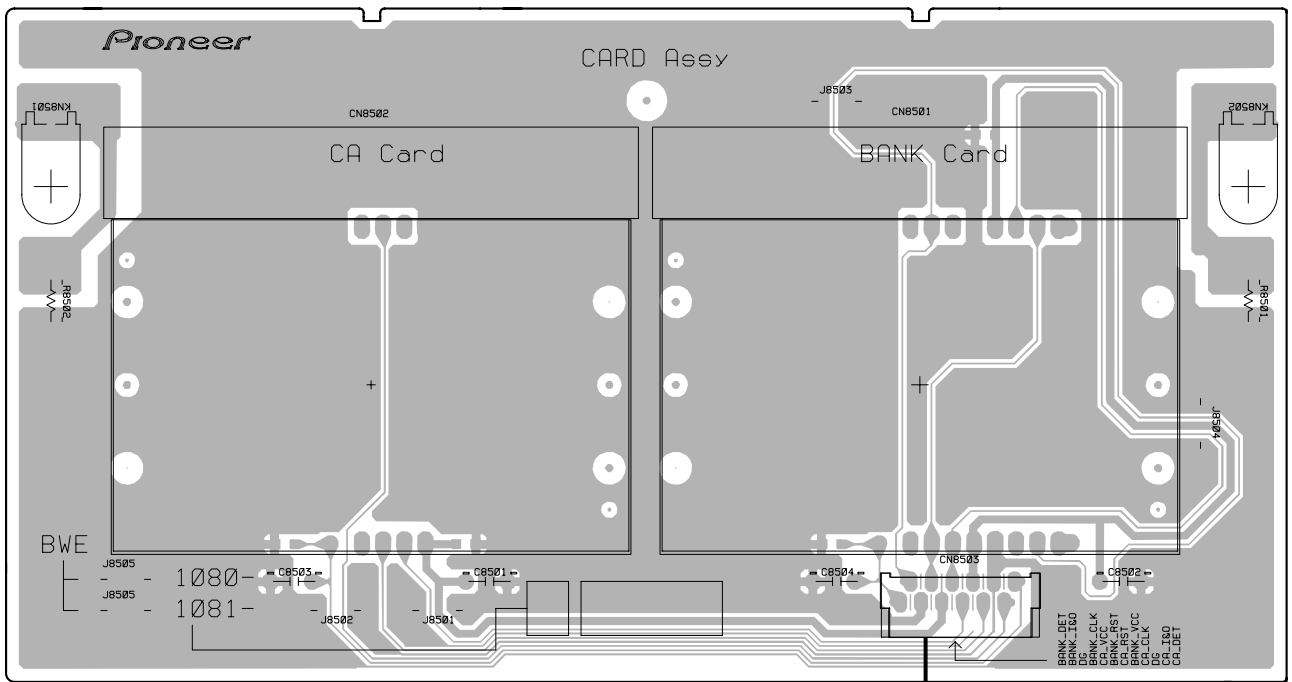
3. The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



4.2 CARD ASSY

C CARD ASSY

SIDE A



(BNP1335-C)

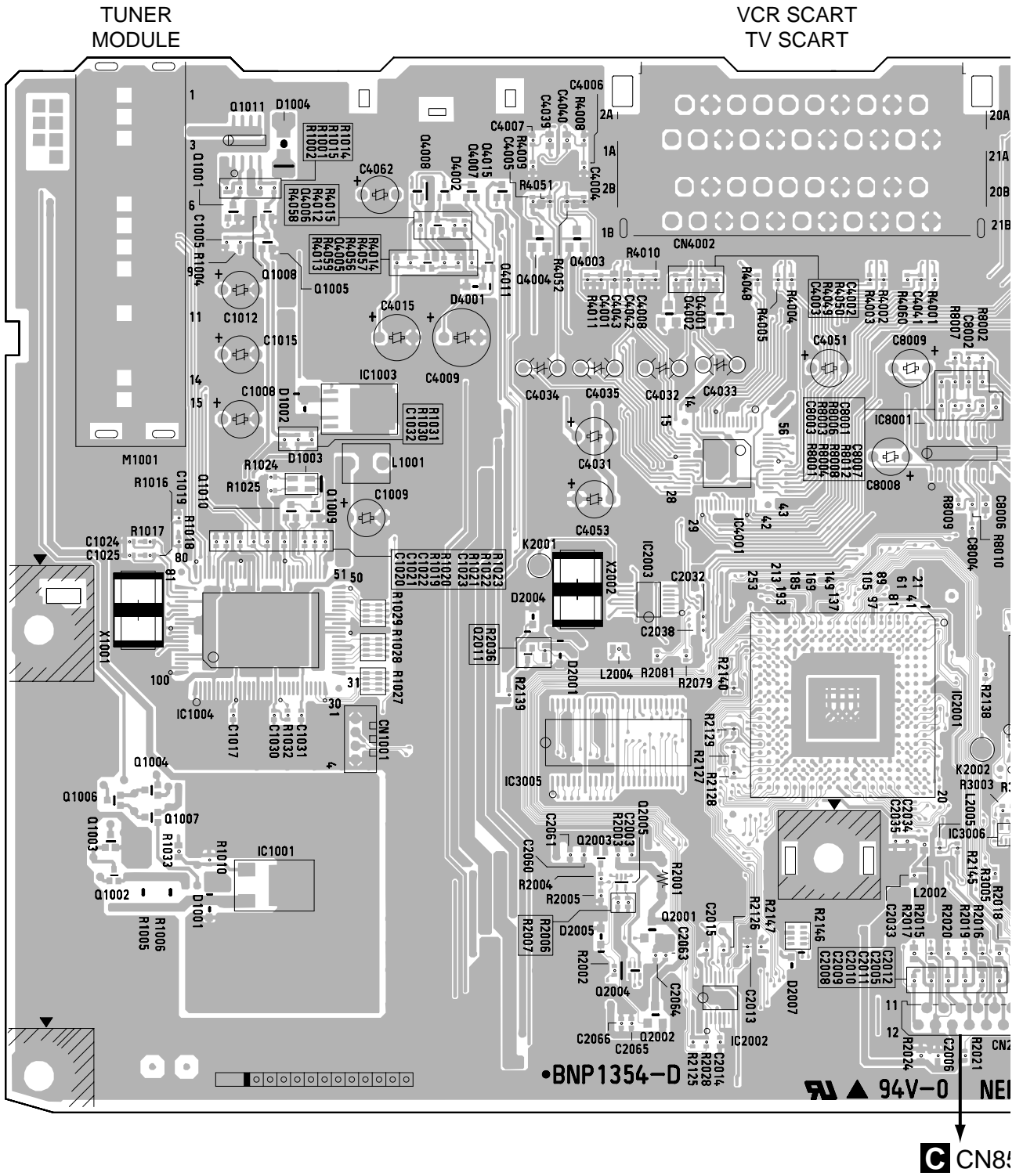
A CN2003

1 2 3 4

TS5, BCT-1510, BCT-1520, BCT-1530

4.3 MAIN ASSY

A MAIN ASSY



| | | | | | | | | |
|-------|-------|--------|-------|-------|--------|--------|--------|--------|
| Q1001 | Q1011 | Q4008 | Q4007 | Q4015 | | | | |
| | Q1008 | | | Q4011 | Q4004 | Q4003 | Q4002 | Q4001 |
| | | IC1003 | | | | | IC4001 | |
| | | Q1009 | | | | | | IC8001 |
| Q1006 | Q1003 | Q1004 | Q1007 | | Q2011 | IC2003 | | IC2001 |
| Q1002 | | IC1001 | | | IC3005 | Q2003 | Q2005 | IC3 |
| | | | | | Q2004 | Q2002 | Q2011 | IC2002 |



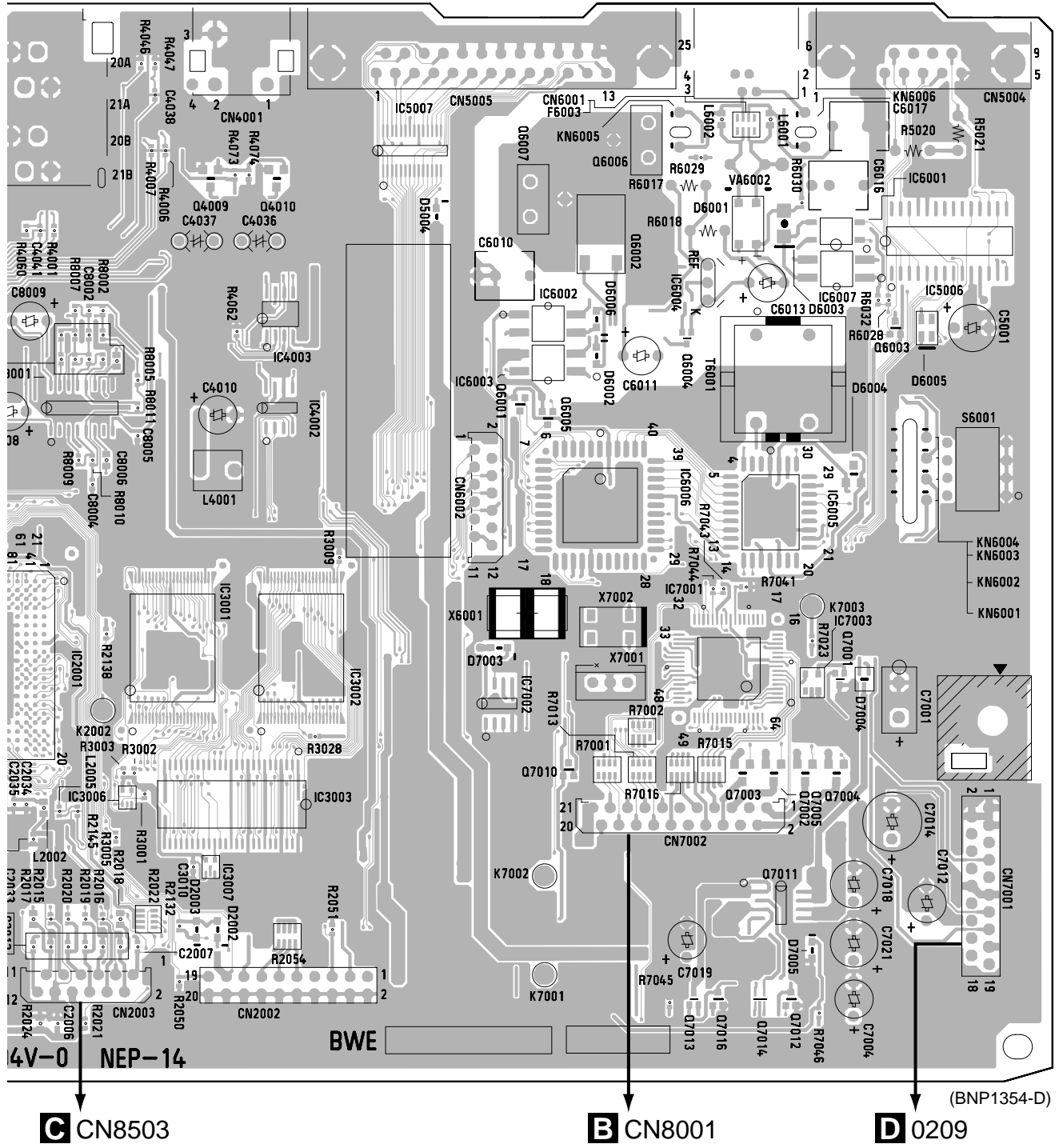
SIDE A

RCA
PIN JACK

D-SUB 25PIN
IEEE 1284

MODULAR
JACK

D-SUB 9PIN
RS232C



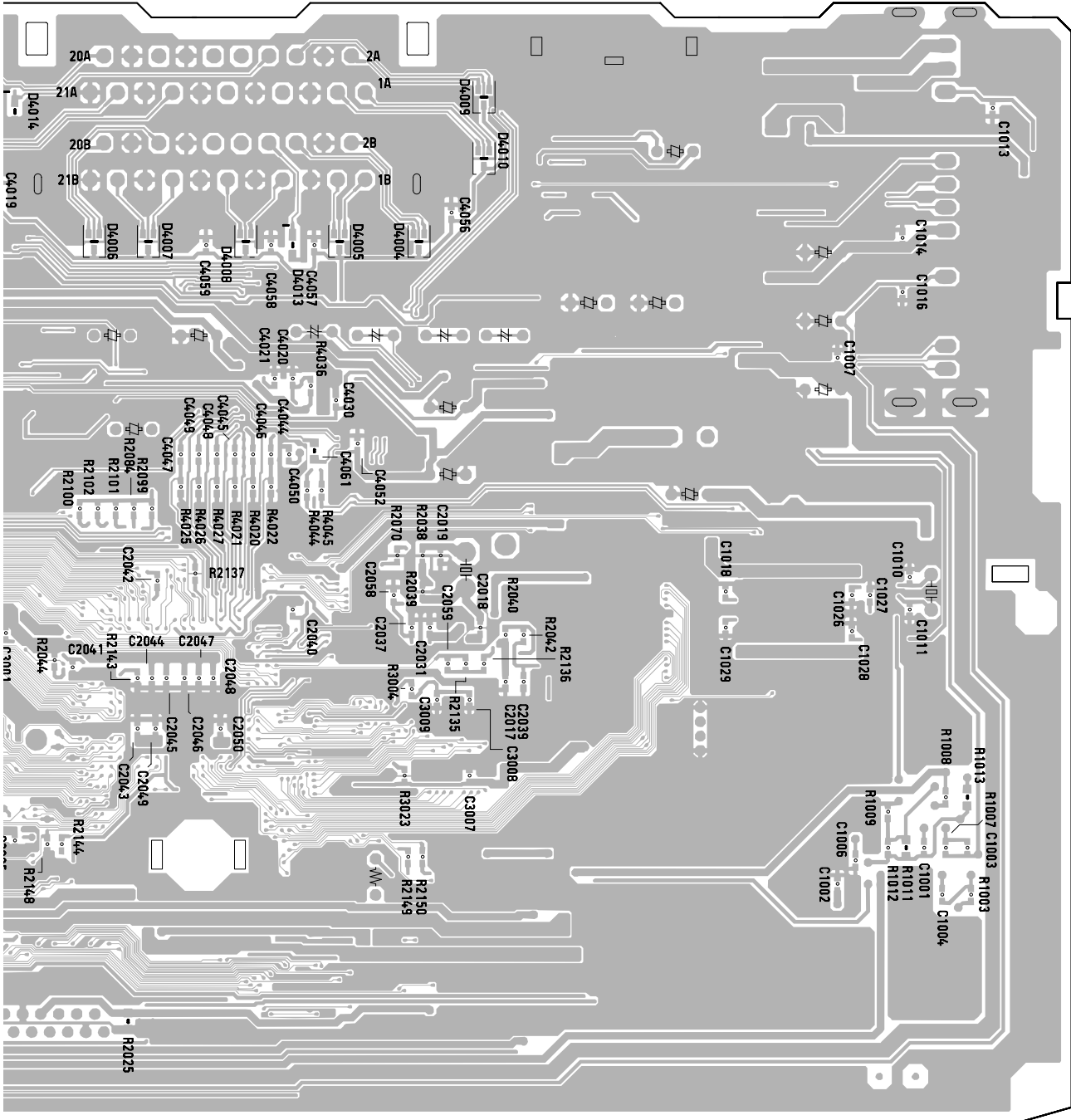
C CN8503

B CN8001

D 0209

| | | | | | | | | | | | | |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--|--|
| | | | IC5007 | Q6007 | Q6006 | | | | | | | |
| IC8001 | Q4009 | Q4010 | IC6002 | IC6003 | Q6002 | IC6004 | IC6001 | IC6007 | IC5006 | | | |
| | IC3001 | IC3002 | Q6001 | Q6005 | IC6006 | IC6005 | Q6003 | | | | | |
| | IC3006 | IC3003 | IC7002 | Q7010 | | IC7001 | IC7003 | Q7001 | | | | |
| | | IC3007 | | | | Q7003 | Q7002 | Q7005 | Q7004 | | | |
| | | | | | | Q7013 | Q7016 | Q7014 | Q7011 | Q7012 | | |

SIDE B



(BNP1354-D)

TS5, BCT-1510, BCT-1520, BCT-1530

5. PCB PARTS LIST

- NOTES: ● Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
 ● The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
 ● When ordering resistors, first convert resistance values into code form as shown in the following examples.
 Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560 Ω \rightarrow 56×10^1 \rightarrow 561 RD1/4PU $\begin{matrix} \boxed{5} & \boxed{6} & \boxed{1} \end{matrix}$ J
 47k Ω \rightarrow 47×10^3 \rightarrow 473 RD1/4PU $\begin{matrix} \boxed{4} & \boxed{7} & \boxed{3} \end{matrix}$ J
 0.5 Ω \rightarrow R50 RN2H $\begin{matrix} \boxed{R} & \boxed{5} & \boxed{0} \end{matrix}$ K
 1 Ω \rightarrow 1R0 RS1P $\begin{matrix} \boxed{1} & \boxed{R} & \boxed{0} \end{matrix}$ K

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
 5.62k Ω \rightarrow 562×10^1 \rightarrow 5621 RN1/4PC $\begin{matrix} \boxed{5} & \boxed{6} & \boxed{2} & \boxed{1} \end{matrix}$ F

■ CONTRAST OF PCB ASSEMBLIES

| Mark | Symbol and Description | Part No. | | | | Remarks |
|----------|--|---|--|--|--|---------|
| | | TS5 | BCT-1510 | BCT-1520 | BCT-1530 | |
| | | NYXK/FR NYXK/FR1 NYXK/FR2 NYXK/FR2 | NYXK/SP | NYXK/IT | NYWXKPL | |
| Δ | MAIN ASSY FRONT ASSY CARD ASSY POWER ASSY | BWE1103 BWE1102 BWE1080 BXF1139 | BWE1115 BWE1102 BWE1080 BXF1139 | BWE1115 BWE1102 BWE1080 BXF1139 | BWE1110 BWE1102 BWE1080 BXF1139 | |

A MAIN ASSY

BWE1103, BWE1115 and BWE1110 are constructed the same except for the following:

| Mark | Symbol and Description | Part No. | | | Remarks |
|------|----------------------------|--|--|--|---------|
| | | BWE1103 | BWE1115 | BWE1110 | |
| | IC1004 IC2001 IC6006 | TDA8083H STI5512AWE AMC2442ACV(0.87) | TDA8083H STI5512AWE AMC2442ACV(0.84) | TDA8083H/E STI5512AWE/E AMC2442ACV(0.84) | |

● MAIN ASSY IC3002 CONTRAST TABLE

IC3002 (16M FLASH Memory) is different according to the model types as the following tabel.

| Mark | Symbol and Description | Part No. | | | | | | | Remarks |
|------|---------------------------|-----------------|------------------|------------------|------------------|----------------------|----------------------|----------------------|---------|
| | | TS5 /NYXK/FR | TS5 /NYXK/FR1 | TS5 /NYXK/FR2 | TS5 /NYXK/FR3 | BCT-1510 /NYXK/SP | BCT-1520 /NYXK/IT | BCT-1530 /NYWXKPL | |
| | IC3002 (16M FLASH Memory) | BGC1059-A-AV | BGC1060-A-AV | BGC1061-A-AV | BGC1062-A-AV | BGC1063-A-AV | BGC1064-A-AV | BGC1065-A-AV | |

| Mark | No. | Description | Part No. | Mark | No. | Description | Part No. |
|----------|--------|----------------|-------------------|----------|-----------------|-------------|---------------------------|
| A | | MAIN ASSY | | | | | |
| | | SEMICONDUCTORS | | | | | |
| | IC6005 | | 73K324BL-IH | | IC4003 | | NJM4558MD |
| | IC2003 | | 74LVU04PW | | IC3003 | | NT56V1616A0T-8 |
| | IC6006 | | AMC2442ACVF(0.87) | | IC5007 | | PACS1284-04Q |
| | IC1003 | | BA05SFP | | IC7001 | | PE5181A |
| | IC7002 | | CAT24WC16J1 | | IC7003 | | PST9124N |
| | IC4002 | | CS4335-KS | | IC2002 | | SN74ACT08PWR |
| | IC4001 | | CXA2161R | | IC2001 | | STI5512MWD |
| | IC5006 | | HIN211CB | | IC3001 | | BGC1058-A-AV |
| | IC3005 | | HYB39S16160AT-10 | Δ | IC3002 | | See IC3002 Contrast table |
| | IC1001 | | NJM317DL1 | Δ | IC3006 | | TC7SZ126FU |
| | | | | | IC1004 | | TDA8083H |
| | | | | | IC6004 | | TL431CLP |
| | | | | | Δ IC6001 | | TLP127 |
| | | | | | Δ IC6007 | | TLP181(GR) |

| Mark | No. | Description | Part No. |
|------|----------------------------------|-------------|----------------|
| | Q1002, Q2003, Q7001 | | 2SA1576A |
| | Q2001, Q2002 | | 2SC2411K |
| | Q1008, Q2011, Q6004, Q7013 | | 2SC4081 |
| | Q6002 | | 2SD1760 |
| | Q6001, Q7010 | | DTA124EUA |
| | Q4015 | | DTA143EUA |
| | Q7002-Q7005 | | DTB113ZK |
| | Q4001, Q4002, Q4009, Q4010 | | DTC123TKA |
| | Q1001, Q1003-Q1007, Q7012, Q7016 | | DTC124EUA |
| | Q6005 | | DTC144TUA |
| | Q7011 | | TPC8201 |
| | Q1011 | | TPC8301 |
| | Q2005 | | UMA10N |
| | Q2004 | | UMD2N |
| | Q7014 | | UMG1N |
| | D1002, D5004, D7003 | | 1SS355 |
| | D7004 | | DAP202U |
| | D2001 | | HVU356 |
| | D4011, D4013, D4014 | | PDZ12B |
| | D2007, D7005 | | PDZ4.7B |
| | D2005 | | PDZ5.6B |
| | D2004 | | PDZ8.2B |
| | D6003 | | PTZ43A |
| | D1004 | | RB160L-40 |
| | D1001, D2002, D2003 | | RB501V-40 |
| | D6004 | | RD4.3MW |
| | D6001 | | S1ZB60-4072 |
| | D4003-D4010, D4012 | | UMZ12N |
| △ | VA6002 | | 2322 594 51516 |

COILS AND FILTERS

| | | |
|---|--------------|---------|
| △ | F6003 | BTF1087 |
| | L1001, L4001 | BTH1065 |
| △ | T6001 | BTX1035 |
| | L2005 | BTX1036 |
| | L2002, L2004 | DTL1038 |

CAPACITORS

| | | |
|---|-----------------------------------|--------------|
| △ | C6016 (470pF/AC250V) | BCG1026 |
| | C7001 (0.047F/5.5V) | BCH1072 |
| | C4022, C4023 | CCSRCH101J50 |
| | C4028, C4029 | CCSRCH181J50 |
| | C7002, C7003 | CCSRCH220J50 |
| | C2005-C2008, C2013, C2014, C2018 | CCSRCH221J50 |
| | C1010, C1011, C2010, C2011, C2019 | CCSRCH330J50 |
| | C6006, C6007 | CCSRCH390J50 |
| | C1009, C4031, C6011, C6013 | CEAK100M50 |
| | C7004, C7019 | CEAK101M10 |
| | C5001 | CEAK101M25 |
| | C7018 | CEAK221M10 |
| | C4053 | CEAK221M25 |
| | C1008, C1012 | CEAK470M16 |
| | C7014 | CEAK471M10 |
| | C4036, C4037 | CEANP100M50 |
| | C4051 | CEAT100M50 |
| | C4010 | CEAT470M16 |
| | C7021 | CEAT470M50 |
| | C4062 | CEAT4R7M50 |
| | C4039, C4040, C4042, C4043 | CKSQYB684K10 |
| | C4060, C4061 | CKSQYB684K10 |
| | C2034, C2058, C4001-C4008 | CKSRYB102K50 |
| | C4016, C4017, C6002 | CKSRYB102K50 |
| | C1002, C1006, C1007, C1013, C1014 | CKSRYB103K50 |

| Mark | No. | Description | Part No. |
|------|-----------------------------------|-------------|--------------|
| | C1016, C2031, C2033, C2035, C2037 | | CKSRYB103K50 |
| | C2060, C4011, C4024, C4025 | | CKSRYB103K50 |
| | C1019, C1024-C1026, C4038, C4041 | | CKSRYB104K16 |
| | C4044-C4049 | | CKSRYB104K16 |
| | C1032 | | CKSRYB153K50 |
| | C6008 | | CKSRYB273K16 |
| | C1001 | | CKSRYB332K50 |
| | C6012 | | CKSRYB333K25 |
| | C2059, C2061, C7007, C7008 | | CKSRYB471K50 |
| | C7016, C7017 | | CKSRYB473K16 |
| | C1017, C1018, C1020-C1023 | | CKSRYF104Z16 |
| | C1027-C1031, C2003, C2015, C2032 | | CKSRYF104Z16 |
| | C2038-C2050, C3001-C3005 | | CKSRYF104Z16 |
| | C3007-C3009, C4018-C4021, C4030 | | CKSRYF104Z16 |
| | C4050, C4052, C4056-C4059 | | CKSRYF104Z16 |
| | C5031-C5035, C6001, C6003-C6005 | | CKSRYF104Z16 |
| | C7005, C7006, C7009, C7011, C7013 | | CKSRYF104Z16 |
| | C7015, C7020, C7022 | | CKSRYF104Z16 |
| | C2063, C2065 | | CKSRYF224Z16 |
| | C1004, C1005, C2017 | | CKSRYF474Z16 |

RESISTORS

| | |
|-----------------------------------|--------------|
| R5020, R5021 (680Ω/1/2W) | BCN1046 |
| R6017 (82Ω/1/2W) | BCN1060 |
| R6018 (47Ω/1/2W) | BCN1063 |
| R2146, R7001, R7013 | RAB4C102J |
| R2022, R2054 | RAB4C103J |
| R7015, R7016 | RAB4C181J |
| R7002 | RAB4C333J |
| R2001 | RD1/2VM3R3J |
| R2017 | RS1/10S331J |
| R1011, R1013, R1033 | RS1/10S3601F |
| R2024, R2025, R7024, R7025, R7029 | RS1/10S471J |
| R7042 | RS1/10S681J |
| R2018 | RS1/10S750J |
| R7026, R7027 | RS1/10S821J |
| R1010 | RS1/16S1200F |
| R1012 | RS1/16S1202F |
| R4020-R4022, R4025, R4026 | RS1/16S2000F |
| R2079, R2081 | RS1/16S9101F |
| R1005, R1006 | RS1/2S1R8J |
| Other Resistors | RS1/16S□□□J |

OTHERS

| | | |
|--------------------|--------------------|-----------|
| △ M1001 | DBS Front End | BXF1135 |
| CN2003 | 12P FFC Connector | 9604S-12C |
| CN7002 | 21P FFC Connector | 9604S-21C |
| JA4001 | 2P Pin Jack | BKB1017 |
| CN4002 | SCART Connector | BKN1019 |
| CN7001 | 19P Plug | BKP1120 |
| CN5004 | DSUB 9P Connector | BKP1122 |
| CN5005 | DSUB 25P Connector | BKP1123 |
| △ CN6001 | 4P Modular Jack | BKP1137 |
| | Ground Plate | BNK1081 |
| X1001 (4MHz) | | BSS1056 |
| X2002 (27MHz) | | BSS1061 |
| X7002 (32.768kHz) | | BSS1091 |
| X7001 (8.0MHz) | | BSS1097 |
| X6001 (11.0592MHz) | | BSS1099 |
| KN6003-KN6006 | Jumper Terminal | PKX1001 |

TS5, BCT-1510, BCT-1520, BCT-1530

| Mark | No. | Description | Part No. |
|----------------------------|-------------|--------------------|-----------|
| B FRONT ASSY | | | |
| SEMICONDUCTORS | | | |
| | D8001 | | BEL1037 |
| SWITCHES AND RELAYS | | | |
| | S8001-S8006 | | ASG7013 |
| RESISTORS | | | |
| | R8001 | (27kΩ/1/4W) | BCN1056 |
| OTHERS | | | |
| | M8001 | Remote Sensor Unit | BXX1026 |
| | CN8001 | 21P FFC Connector | 9607S-21F |

| | | | |
|--------------------|-------------|----------------------|-------------|
| C CARD ASSY | | | |
| CAPACITORS | | | |
| | C8501-C8504 | | CKCYF103Z50 |
| RESISTORS | | | |
| | R8502 | (100Ω/1/4W) | BCN1057 |
| OTHERS | | | |
| | CN8503 | 12P Connector | 9604S-12F |
| | CN8502 | 8Pin CARD Connector | BKP1141 |
| | CN8501 | 16Pin CARD Connector | BKP1142 |

| | | | |
|---|--|--|--|
| D POWER ASSY | | | |
| This ASSY has no service part as a assy part. | | | |
| Only the fuse(0109:REK1102) is the service part as a set part. Refer to page 7. | | | |

6. ADJUSTMENT

There is no information to be shown in this chapter.

7. GENERAL INFORMATION

7.1 IC

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

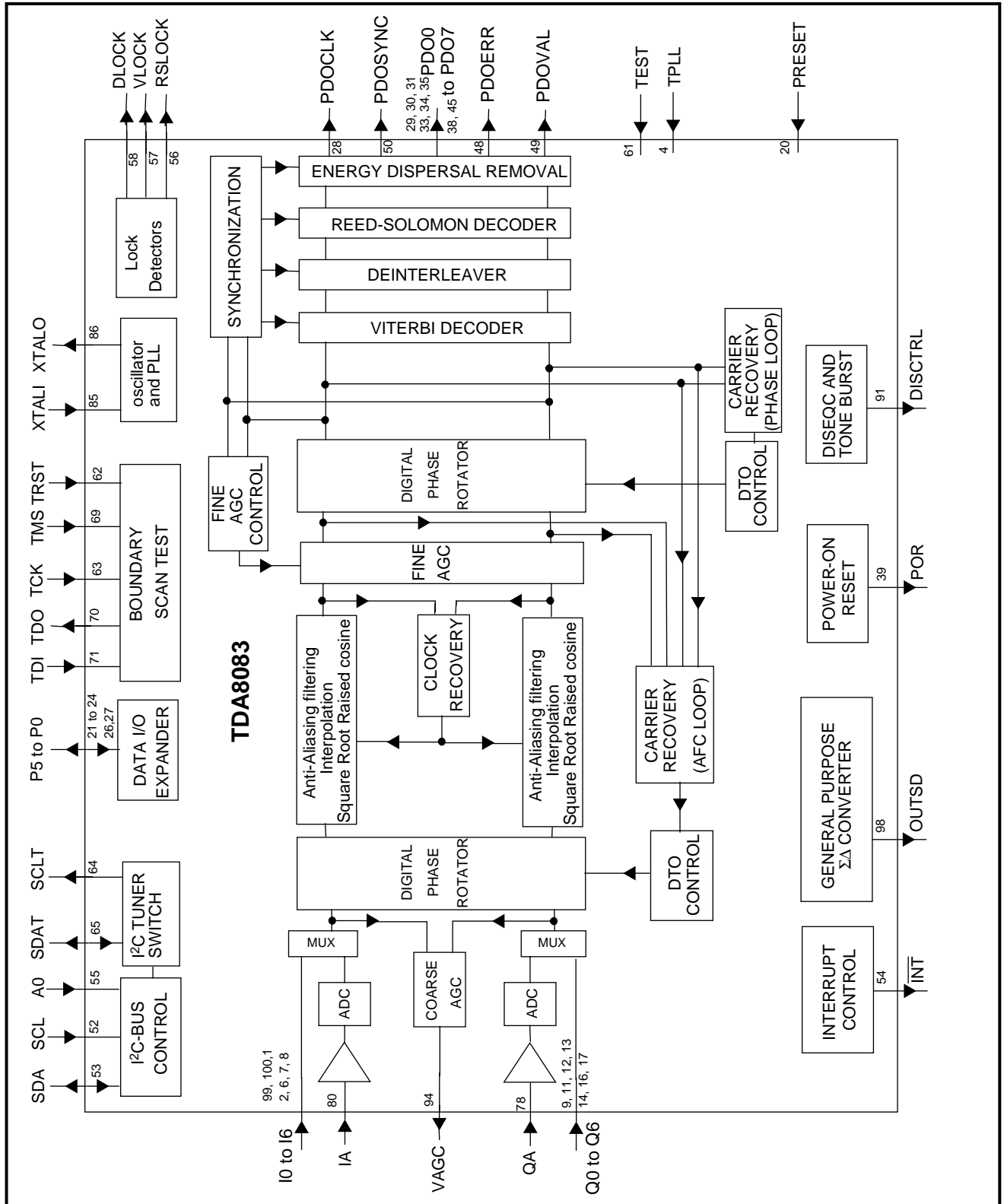
● List of IC

| | | | | |
|-------------------|------------|----------|-----------|-------------|
| TDA8083H | STI5512MWD | CXA2161R | CS4335-KS | 73K324BL-IH |
| AMC2442ACVF(0.87) | PE5181A | | | |

■ TDA8083H (MAIN ASSY(1/7) : IC1004)

• Demodulator and Decoder

● Block Diagram



TS5, BCT-1510, BCT-1520, BCT-1530

●Pin Function (1/3)

| PIN | SYMBOL | I/O | DESCRIPTION |
|-----|-------------------|-----|---|
| 1 | I2 | I | digital I-input bit 2 (ADC bypass) |
| 2 | I3 | I | digital I-input bit 3 (ADC bypass) |
| 3 | V _{SSD1} | – | digital ground 1 (core and input periphery) |
| 4 | TPLL | I | test pin (normally connected to ground) |
| 5 | V _{SSD2} | – | digital ground 2 (core and input periphery) |
| 6 | I4 | I | digital I-input bit 4 (ADC bypass) |
| 7 | I5 | I | digital I-input bit 5 (ADC bypass) |
| 8 | I6 | I | digital I-input bit 6 (ADC bypass - MSB) |
| 9 | Q0 | I | digital Q-input bit 0 (ADC bypass - LSB) |
| 10 | V _{DDD1} | – | digital supply voltage1 (core and input periphery) |
| 11 | Q1 | I | digital Q-input bit 1 (ADC bypass) |
| 12 | Q2 | I | digital Q-input bit 2 (ADC bypass) |
| 13 | Q3 | I | digital Q-input bit 3 (ADC bypass) |
| 14 | Q4 | I | digital Q-input bit 4 (ADC bypass) |
| 15 | V _{SSD3} | – | digital ground 3 (core and input periphery) |
| 16 | Q5 | I | digital Q-input bit 5 (ADC bypass) |
| 17 | Q6 | I | digital Q-input bit 6 (ADC bypass - MSB) |
| 18 | V _{SSD4} | – | digital ground 4 (output periphery) |
| 19 | V _{DDD2} | – | digital supply voltage 2 (core and input periphery) |
| 20 | PRESET | I | set device into default mode |
| 21 | P3 | I/O | quasi-bidirectional I/O port (bit 3) |
| 22 | P2 | I/O | quasi-bidirectional I/O port (bit 2) |
| 23 | P1 | I/O | quasi-bidirectional I/O port (bit 1) |
| 24 | P0 | I/O | quasi-bidirectional I/O port (bit 0) |
| 25 | V _{DDD3} | – | digital supply voltage 3 (output periphery) |
| 26 | P5 | I/O | quasi-bidirectional I/O port (bit 5) |
| 27 | P4 | I/O | quasi-bidirectional I/O port (bit 4) |
| 28 | PDOCLK | O | output clock for transport stream bytes |
| 29 | PDO0 | O | parallel data output (bit 0) - Serial data output |
| 30 | PDO1 | O | parallel data output (bit 1) |
| 31 | PDO2 | O | parallel data output (bit 2) |
| 32 | V _{SSD5} | – | digital ground 5 (output periphery) |
| 33 | PDO3 | O | parallel data output (bit 3) |
| 34 | PDO4 | O | parallel data output (bit 4) |
| 35 | PDO5 | O | parallel data output (bit 5) |
| 36 | V _{SSD6} | – | digital ground 6 (core and input periphery) |
| 37 | V _{SSD7} | – | digital ground 7 (core and input periphery) |
| 38 | PDO6 | O | parallel data output (bit 6) |

●Pin Function (2/3)

| PIN | SYMBOL | I/O | DESCRIPTION |
|-----|----------------------|-----|--|
| 39 | POR | O | Power-on Reset |
| 40 | V _{DDD4} | – | digital supply voltage 4 (output periphery) |
| 41 | V _{DDD5} | – | digital supply voltage 5 (core and input periphery) |
| 42 | V _{SSD8} | – | digital ground 8 (core and input periphery) |
| 43 | V _{DDD6} | – | digital supply voltage 6 (core and input periphery) |
| 44 | V _{DDD7} | – | digital supply voltage 7 (output periphery) |
| 45 | PDO7 | O | parallel data output (bit 7) |
| 46 | n.c. | – | not connected |
| 47 | V _{SSD9} | – | digital ground 9 (core and input periphery) |
| 48 | PDOERR | O | transport error indicator |
| 49 | PDOVAL | O | data valid indicator |
| 50 | PDOSYNC | O | transport packet synchronization signal |
| 51 | V _{SSD10} | – | digital ground 10 (output periphery) |
| 52 | SCL | I | serial clock of I ² C-bus |
| 53 | SDA | I/O | serial data of I ² C-bus |
| 54 | INT | O | interrupt output (active LOW) |
| 55 | A0 | I | I ² C hardware address |
| 56 | RSLOCK | O | Reed-Solomon lock indicator |
| 57 | VLOCK | O | Viterbi lock indicator |
| 58 | DLOCK | O | Demodulator lock indicator |
| 59 | V _{DDD8} | – | digital supply voltage 8 (core and input periphery) |
| 60 | V _{DDD9} | – | digital supply voltage 9 (core and input periphery) |
| 61 | TEST | I | test pin (normally connected to ground) |
| 62 | TRST | I | BST optional asynchronous reset (normally connected to ground) |
| 63 | TCK | I | BST dedicated test clock (normally connected to ground) |
| 64 | SCLT | O | serial clock of I ² C-bus loop-through |
| 65 | SDAT | I/O | serial data of I ² C-bus loop-through |
| 66 | V _{DDD10} | – | digital supply voltage 10 (core and input periphery) |
| 67 | V _{SSD11} | – | digital ground 11 (output periphery) |
| 68 | V _{SSD12} | – | digital ground 12 (core and input periphery) |
| 69 | TMS | I | BST input control signal (normally connected to ground) |
| 70 | TDO | O | BST serial test data out |
| 71 | TDI | I | BST serial test data in (normally connected to ground) |
| 72 | V _{DDD11} | – | digital supply voltage 11 (core and input periphery) |
| 73 | V _{SSD13} | – | digital ground 13 (core and input periphery) |
| 74 | V _{SSD(AD)} | – | digital ground A/D converter |
| 75 | V _{DDD(AD)} | – | digital supply A/D converter |
| 76 | V _{ref(B)} | O | bottom reference voltage for ADC |
| 77 | V _{SSA1} | – | analog ground 1 |
| 78 | QA | I | analog input Q |
| 79 | V _{ref(Q)} | O | AGC decoupling - Q path |

TS5, BCT-1510, BCT-1520, BCT-1530

●Pin Function (3/3)

| PIN | SYMBOL | I/O | DESCRIPTION |
|-----|---------------------|-----|--|
| 80 | IA | I | analog input 1 |
| 81 | V _{SSA2} | – | analog ground 2 |
| 82 | V _{ref(I)} | O | AGC decoupling - Ipath |
| 83 | V _{DDA} | – | analog supply voltage |
| 84 | V _{DDXTAL} | – | supply voltage for crystal oscillator |
| 85 | XTALI | I | crystal oscillator input |
| 86 | XTALO | O | crystal oscillator output |
| 87 | V _{SSXTAL} | – | ground for crystal oscillator |
| 88 | V _{DDD12} | – | digital supply voltage 12 (core and input periphery) |
| 89 | V _{DDD13} | – | digital supply voltage 13 (core and input periphery) |
| 90 | V _{SSD14} | – | digital ground 14 (core and input periphery) |
| 91 | DiSCTRL | O | 22 kHz / 44kHz output for dish control applications |
| 92 | V _{SSD15} | – | digital ground 15 (output periphery) |
| 93 | V _{SSD16} | – | digital ground 16 (core and input periphery) |
| 94 | V _{AGC} | O | Tuner AGC output |
| 95 | n.c. | – | not connected |
| 96 | V _{DDD14} | – | digital supply voltage 14 (output periphery) |
| 97 | V _{DDD15} | – | digital supply voltage 15 (core and input periphery) |
| 98 | OUTSD | O | Sigma Delta Output |
| 99 | I0 | I | digital I-input bit 0 (ADC bypass - LSB) |
| 100 | I1 | I | digital I-input bit 1 (ADC bypass) |

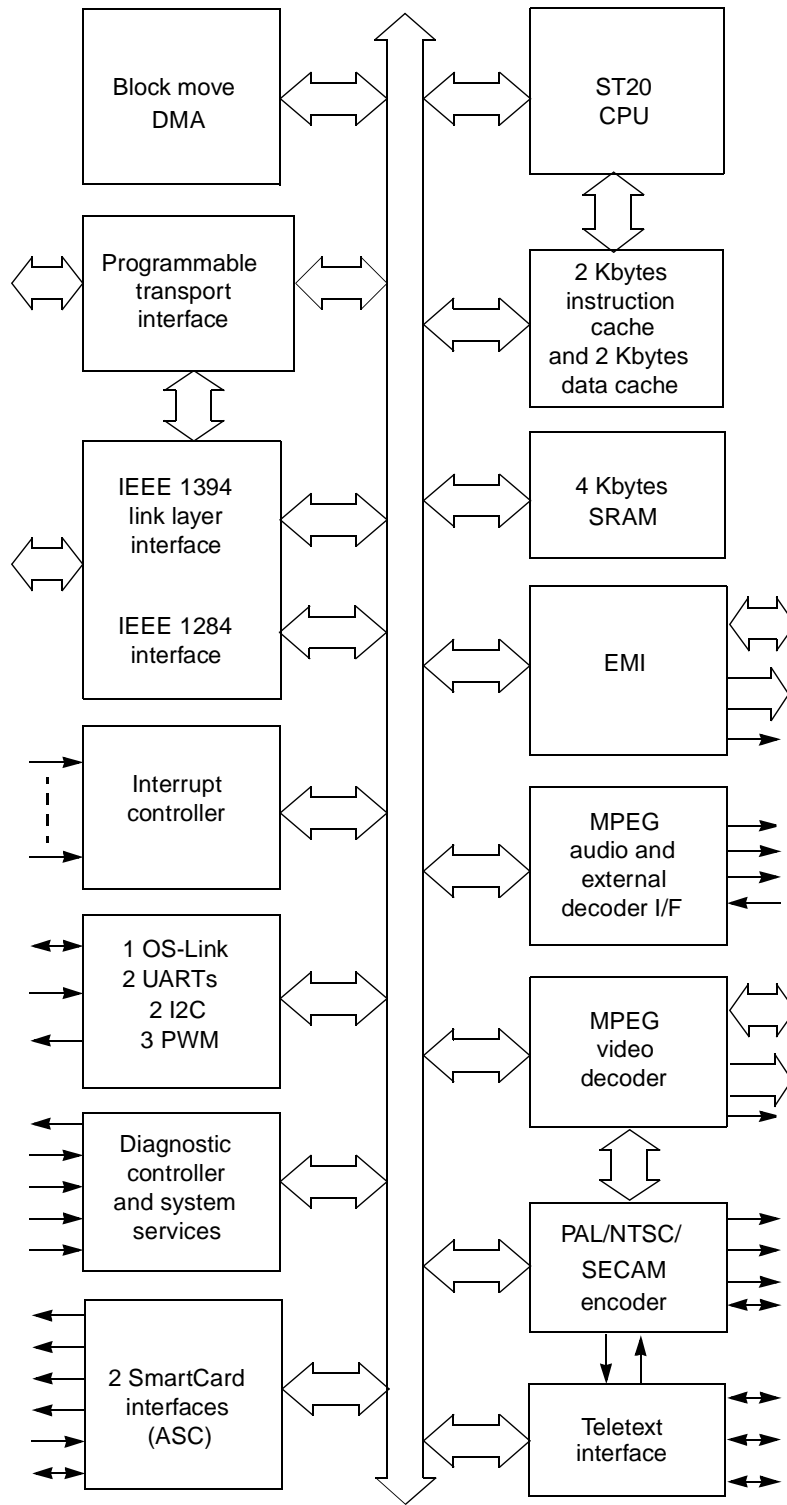
Note

1. Pins I0 to I6, Q0 to Q6, SCL, SDA, $\overline{\text{INT}}$, SCLT, SDAT, V_{AGC} and OUTSD are 5V tolerant.
2. The structure of I/O's and the maximum output drive are specified in Section 12

■ STI5512MWD (MAIN ASSY(2/7) : IC2001)

• Programmable Transport IC

● Block Diagram



TS5, BCT-1510, BCT-1520, BCT-1530

●Pin Function (1/5)

Signal names are prefixed by **not** if they are active low; otherwise they are active high.

| Pin | Number | Function |
|------------------------|--------|--|
| VDD | 13 | Power supply |
| GND | 16 | Ground |
| VClamp1-3 ¹ | 3 | Power supply for clamp diodes |
| VDDA0-1 | 2 | Analog power supply for PAL/NTSC/SECAM encoder |
| VSSA0-1 | 2 | Analog ground for PAL/NTSC/SECAM encoder |
| RTCVD | 1 | Real time clock supply |
| VDD_VPLL | 1 | Analog power supply for video PLL |
| VSS_VPLL | 1 | Analog ground for video PLL |

Table 1 Power supply pins

1. The VClamp pins are a power supply bus used to diode clamp the voltage on 5V tolerant digital input or output pins to. The voltage on the digital signal pin is then clamped to within $V_{I\max}$ (5.5V) if the applied voltage is increased above 5V.

If the device is to be interfaced to 3.3V logic signals only, then the VClamp pins can be connected to the STi5512 3.3V VDD power supply. However if any pin is to be interfaced to a 5V logic signal, then the VClamp pins must be connected to the 5V power supply (the 5V logic device power supply). Note in this case the 5V power supply must be capable of sinking the clamp current of transient signals above 5V.

In the latter case it is important to ensure the correct power supply ramp sequence. The VClamp power supply must be applied before or at the same time as the VDD 3.3V power supply. This is to ensure that during power supply power up and power down, $V_{Clamp} > VDD + 0.5V$.

| Pin | In/Out | Function |
|----------------------------|--------|--|
| R_OUT ¹ | out | Red output |
| G_OUT ¹ | out | Green output |
| B_OUT2 ¹ | out | Blue output |
| C_OUT ¹ | out | Chroma output |
| CV_OUT ¹ | out | Composite video output |
| Y_OUT ¹ | out | Luma output |
| I_REF_DAC_RGB ¹ | in | DAC current reference |
| I_REF_DAC_YCC ¹ | in | DAC current reference |
| V_REF_DAC_RGB ¹ | in | DAC voltage reference |
| V_REF_DAC_YCC ¹ | in | DAC voltage reference |
| OSD_ENABLE | in/out | OSD enable |
| notHSYNC | in/out | Horizontal sync |
| ODD_OR_EVEN | in/out | Vertical sync |
| YC0-7 ² | output | Digital YUV output |
| CFC | input | DENC color burst phase and frequency control. This pin can be used in non-scart based Genlock applications. If it is not used, this pin must ground. |

Table 2 Video output interface pins

●Pin Function (2/5)

1. The digital encoder video outputs are analogue signals and are not 5V tolerant. The same applies to the video DAC voltage and current reference pins.
2. The **YC0** pin is tri-stated during reset and then sampled at the end of the reset to determine whether the EMI pins are in STi5510 or STi5512 mode. If the **YC0** pin is sampled high (i.e at VDD) then the STi5510 mode is selected for the EMI pins and a low value selects STi5512 mode. In STi5512 mode the address shift for bank 3 is dependent on the boot bank width and the strobe pins are tri-stated when the EMI bus is granted to an external DMA device. External 10KΩ pull-up or pull-down resistors should be fitted to the **YC0** according to the functionality desired. If this pin is left *not* connected, the pin will be pulled high by an internal pull-up and will default the EMI pins to STi5510 mode.

| Pin | In/Out | Function |
|-------------------|--------|-------------------------------------|
| SCLK/A_C_STB | out | Serial clock or AC-3 data strobe |
| PCM_DATA/A_C_DATA | out | PCM data out or AC-3 data out |
| PCMCLK | in/out | PCM clock |
| LRCLK/A-WORD_CLK | out | Left/right clock or AC-3 word clock |
| notA_C_REQ i | n | AC-3 data request |
| notA_PTS_STB | in | AC-3 audio PTS strobe |

Table 3 AC-3/MPEG1 audio output interface pins

| Pin | In/Out | Function |
|--------------|--------|-----------|
| Interrupt0-1 | in | Interrupt |

Table 4 External interrupt pins

| Pin | In/Out | Function |
|---------------------------------|-------------|---|
| ClockIn | in | System input clock - PLL or TimesOneMode |
| SpeedSelect0-1 | in | PLL speed selector |
| notRST | in | System reset |
| CPUAnalyse / TrigIn | in | Error analysis / External trigger input to DCU |
| CPUReset | in | Soft reset for analyzing from OS-Link |
| ErrorOut / TrigOut ¹ | in/out, out | Error indicator / Signal to trigger external debug circuitry (e.g. LSA) |

Table 5 System services pins

1. This pin is tri-stated during reset and then sampled at the end of the reset to determine whether the OS-Link is active and to determine the function of the shared **CPUAnalyse / TrigIn** and the **ErrorOut / TrigOut**, as described in the *System Services* chapter. If the **ErrorOut** pin is sampled high (i.e at VDD) then the DCU signals (**TrigIn** and **TrigOut**) are selected and a low value indicates OS-Link signals (i.e. **CPUAnalyse**, **ErrorOut**) are to be used. External 10KΩ pull-up or pull-down resistors should be fitted to the **ErrorOut** according to the functionality desired.

TS5, BCT-1510, BCT-1520, BCT-1530

●Pin Function (3/5)

| Pin | In/Out | Function |
|---------------|--------|--|
| MemAddr2-23 | out | Address bus |
| MemData0-31 | in/out | Data bus. MemData0 is the least significant bit (LSB) and MemData31 is the most significant bit (MSB). |
| MemRdnotWr | out | ReadnotWrite strobe |
| MemReq | in | Direct memory access request |
| MemGrant | out | Direct memory access granted |
| MemWait | i | Memory cycle extender |
| notMemCAS0,2 | out | CAS strobes for SDRAM/DRAM in Banks 0 and 1 |
| notMemCAS1 | out | CAS strobe for DRAM or SDRAM clock |
| notMemCAS3 | out | CAS strobe for DRAM or sub-bank chip select for bank 3 |
| notMemRAS0 | out | RAS strobe for SDRAM/DRAM in Bank 0, chip select for Bank0 or RAS strobe for lowest DRAM sub-bank in Bank0 |
| notMemRAS1 | out | RAS strobe for highest DRAM sub-bank in Bank0 or SDRAM Chip select signal for highest sub-bank of Bank0 |
| notMemRAS2 | out | RAS strobe for SDRAM/DRAM in bank 1, chip select for Bank1 or RAS strobe for lowest DRAM sub-bank in Bank1 |
| notMemRAS3 | out | RAS strobe for highest DRAM sub-bank in Bank1 or SDRAM Chip select signal for Bank1 |
| notMemCSROM | out | Chip select strobe for ROM in bank3. |
| notSDRAMCS0 | out | SDRAM Chip select signal for Bank0 or lowest sub-bank of Bank0 |
| notMemOE | out | Output enable strobe - banks 0-3. |
| notMemBE0-3 | out | Byte enable strobes - banks 0-3. |
| notMemCS2 | out | Chip select strobe for memory in bank 2. |
| BootSource0-1 | in | Boot from ROM or from link. |
| ProcClockOut | out | Processor clock. |

Table 6 STI5512 External memory interface pins

| Pin | In/Out | Function |
|---------------|--------|--|
| AD0-12 | out | SDRAM address bus |
| DQ0-15 | in/out | SDRAM data bus (lower byte) |
| notSDCS0 | out | SDRAM chip select for first SDRAM |
| notSDCS1/AD13 | out | SDRAM chip select for second SDRAM or AD13 |
| notSDCAS | out | SDRAM CAS |
| notSDRAS | out | SDRAM RAS |
| notSDWE | out | SDRAM write enable |
| MEMCLKIN | in | SDRAM memory clock input |
| MEMCLKOUT | out | SDRAM memory clock output |
| DQML | out | DQ mask enable (lower) |
| DQMU | out | DQ mask enable (upper) |

Table 7 Shared SDRAM interface pins

●Pin Function (4/5)

| Pin | In/Out | Function |
|-------------------------|--------|---------------------------------|
| LPClockIn ¹ | in | Low power input clock |
| LPClockOsc ¹ | in/out | Low power clock oscillator |
| AUX_CLK_OUT | out | Auxiliary clock for general use |

Table 8 Low power controller and real time clock pins

1. The low power clock pins are not 5V tolerant.

| Pin | In/Out | Function |
|-----------|--------|---|
| PIO0[0-7] | in/out | Parallel input/output pin or alternative function (see Table 15) |
| PIO1[0-7] | in/out | Parallel input/output pin or alternative function (see Table 15) |
| PIO2[0-7] | in/out | Parallel input/output pin or alternative function (see Table 15) |
| PIO3[0-7] | in/out | Parallel input/output pin or alternative function (see Table 15) |
| PIO4[0-7] | in/out | Parallel input/output pin or alternative function (see Table 15) |

Table 9 PIO pins

| Pin | In/Out | Function |
|---------|--------|----------------------------|
| LinkIn | in | Serial data input channel |
| LinkOut | out | Serial data output channel |

Table 10 OS-Link pins

| Pin | In/Out | Function |
|------------------|--------|-------------------------------|
| TSInByteClk | in | Link IC byte clock |
| TSInByteClkValid | in | Link IC byte clock valid edge |
| TSInData0-7 | in | Link IC data |
| TSInError | in | Link IC packet error |
| TSInPacketClk | in | Link IC packet strobe |

Table 11 Transport stream input pins

| Pin | In/Out | Function |
|----------------|--------|---|
| TtxtEvennotOdd | in | Teletext even not odd vertical sync signal |
| TtxtHsync | in | The HSYNC signal input when the teletext interface is operating in the input mode |

Table 12 Teletext interface

TS5, BCT-1510, BCT-1520, BCT-1530

● Pin Function (5/5)

The teletext clock and data inputs are shared PIO pins, as shown in Table 15 .

High speed data port pins have a dual function, and can be used either to interface to an external IEEE 1394 link layer controller or provide an IEEE 1284 parallel port interface.

| Pin | In/Out | Function |
|------------------------------|-------------|--|
| 1284Data0-7 / AVData0-7 | in/out | IEEE 1284 port data or AV data |
| 1284notSelectIn | in | IEEE 1284 port control signals or AV signals |
| 1284notInit / AVPacketTag3 | in | |
| 1284notFault / AVPacketTag2 | out | |
| 1284notAutoFd / AVPacketTag1 | in | |
| 1284Select / AVPacketTag0 | out | |
| 1284PErrror / AVByteClkValid | out, in/out | |
| 1284Busy / AVPacketClk | out, in/out | |
| 1284notAck / AVByteClk | out | |
| 1284notStrobe/AVPacketError | in | |

Table 13 High-speed data port pins

| Pin | In/Out | Function |
|---------|--------|------------------|
| TDI | in | Test data input |
| TDO | out | Test data output |
| TMS | in | Test mode select |
| TCK | in | Test clock |
| notTRST | in | Test logic reset |

Table 14 TAP pins

● PIO pins and alternative functions

To improve flexibility and to allow the STI5512 to fit into different set-top box application architectures, the input and output signals from some of the peripherals are not directly connected to the pins of the device. Instead they are assigned to the alternative function inputs and outputs of a PIO port bit. This scheme allows these pins to be configured as general purpose PIO if the associated peripheral input or output is not required in that particular application.

Table 17 shows the assignment of the alternative functions to the PIO bits. Parentheses () in the table indicate suggested or possible pin usages as a PIO, not an alternative function connection.

| Port bit | Alternative function of PIO pins | | | | |
|----------|----------------------------------|------------|-----------------------|--------------|---------------------------|
| | PIO port 0 | PIO port 1 | PIO port 2 | PIO port 3 | PIO port 4 |
| 0 | ASC0TxD or Sc1DataOut | SSC0 MTSR | ASC2TxD or Sc0DataOut | SSC1 MTSR | ASC3TxD |
| 1 | ASC0TRxD or Sc1DataIn | SSC0 MRST | ASC2RxD or Sc0DataIn | SSC1 MRST | ASC3RxD |
| 2 | Sc1ClkGenExtClk | SSC0 SCIk | Sc0ClkGenExtClk | SSC1 SCIk | TtxtClockIn |
| 3 | Sc1Clk | PWMOut0 | Sc0Clk | CaptureIn0 | 1284PeriphLogicH/ASC3 CTS |
| 4 | (Sc1RST) | PWMOut1 | (Sc0RST) | CaptureIn1 | 1284HostLogicH/ASC3 RTS |
| 5 | (Sc1CmdVcc) | ASC1TxD | (Sc0CmdVcc) | CaptureIn2 | Interrupt2 |
| 6 | (Sc1CmdVpp) Sc1Dir | ASC1RxD | (Sc0CmdVpp) Sc2Dir | CompareOut2 | Interrupt3 |
| 7 | (Sc1Detect) | PWMOut2 | (Sc0Detect) | 1284InnotOut | TtxtData |

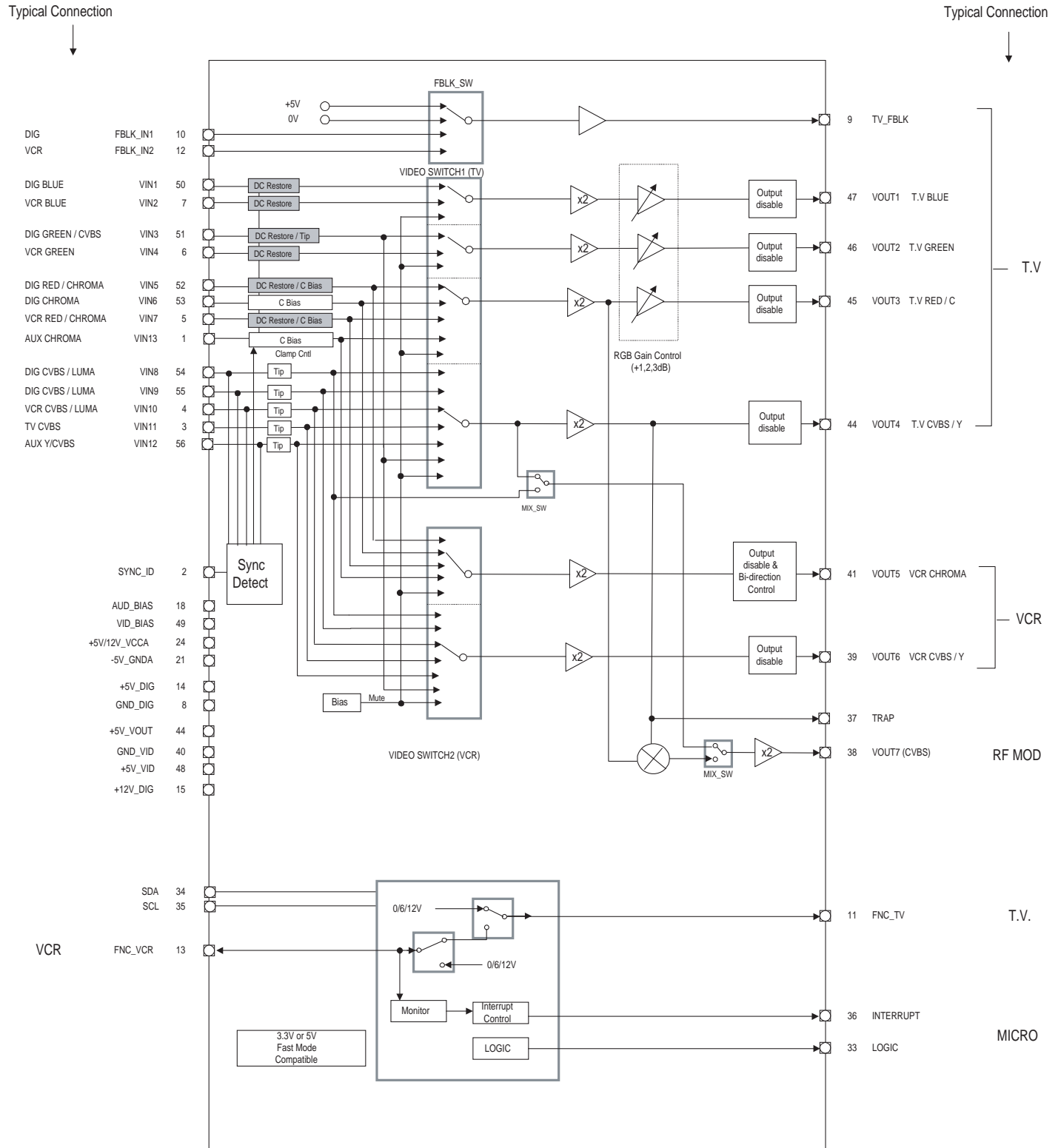
Table 15 Alternative function of PIO pins

■ CXA2161R (MAIN ASSY(4/7) : IC4001)

• AV Switch

●Block Diagram(1/2)

Video and Digital section

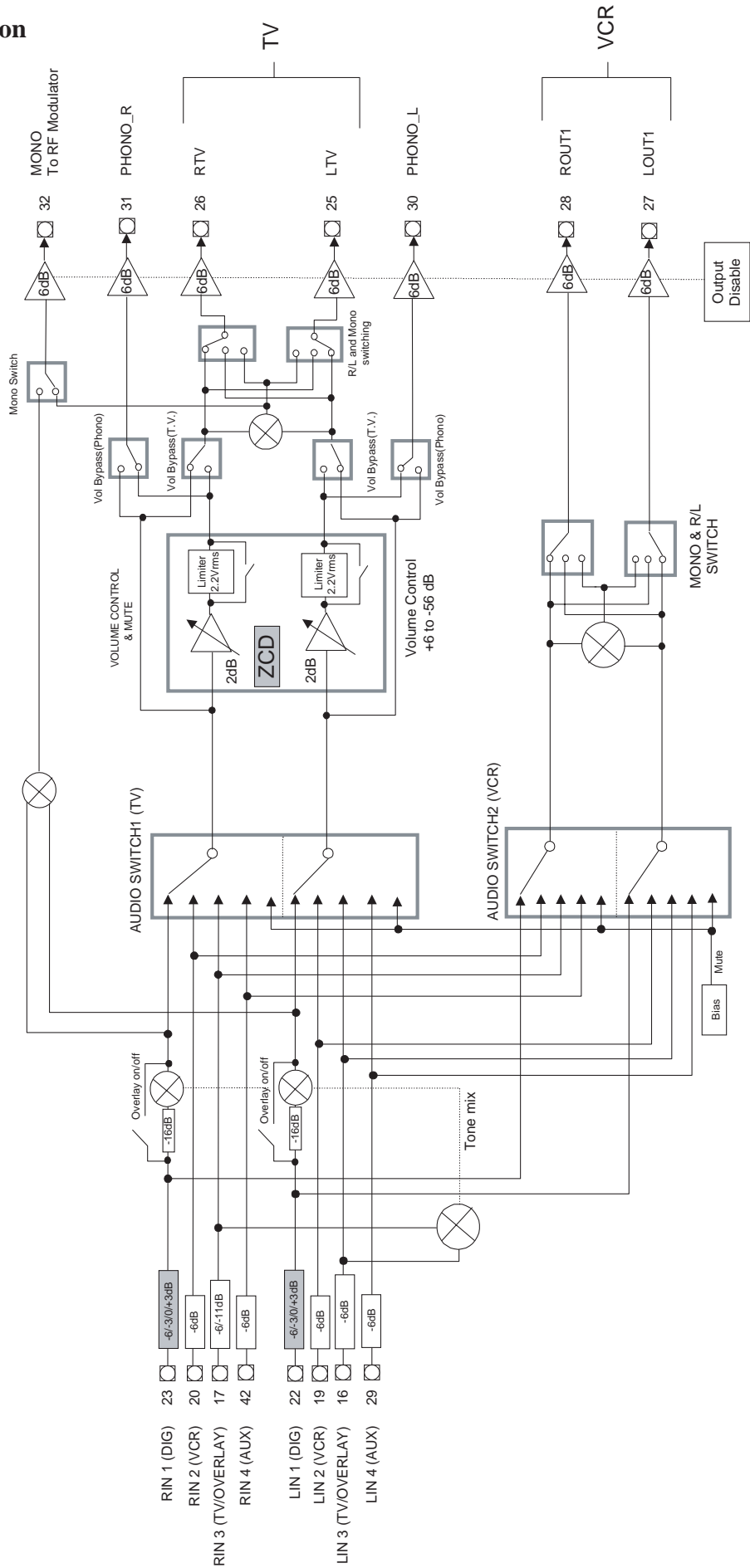


Note: All video outputs contain 75Ω drivers, except Vout7.

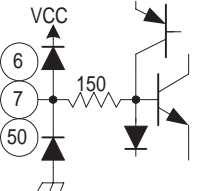
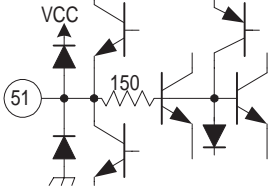
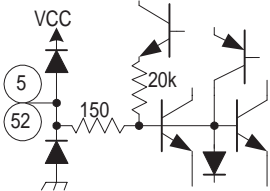
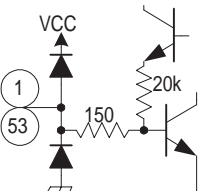
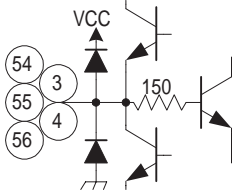
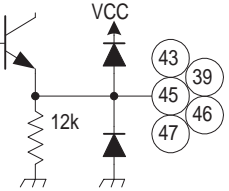
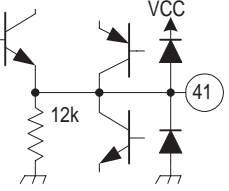
TS5, BCT-1510, BCT-1520, BCT-1530

●Block Diagram(2/2)

Audio section



●Pin Function (1/3)

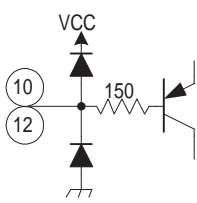
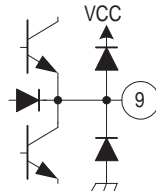
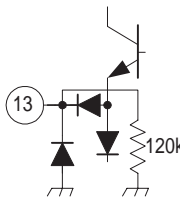
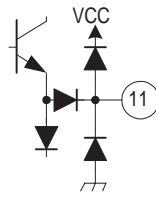
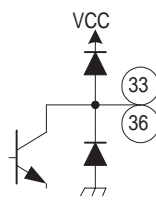
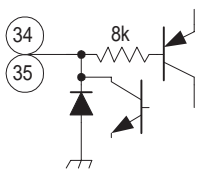
| Pin Num | Symbol | Pin Voltage (V) | Equivalent Circuit | Description |
|----------------------------|--|-----------------|---|---------------------------------|
| 50 7 6 | VIN_1 VIN_2 VIN_4 | 2.4 |  | RGB signal inputs |
| 51 | VIN_3 | 2.4 |  | RGB signal input |
| | | 2.35 | | OR CVBS signal input |
| 52 5 | VIN_5 VIN_7 | 2.4 |  | RGB signal inputs |
| | | 3.0 | | OR Chrominance signal inputs |
| 53 1 | VIN_6 VIN_13 | 3.0 |  | Chrominance signal inputs |
| 54 55 4 3 56 | VIN_8 VIN_9 VIN_10 VIN_11 VIN_12 | 2.35 |  | CVBS / Luminance signal inputs |
| 47 46 45 43 39 | VOUT_1 VOUT_2 VOUT_3 VOUT_4 VOUT_6 | 0.4 |  | RGB / CVBS signal outputs |
| 41 | VOUT_5 | 0.4 |  | Chrominance signal output |

TS5, BCT-1510, BCT-1520, BCT-1530

●Pin Function (2/3)

| Pin Num | Symbol | Pin Voltage (V) | Equivalent Circuit | Description |
|--|--|--------------------------------------|--------------------|---|
| 38 | VOUT_7 | 0.4 | | Typically RF modulator signal output Minimum load = 20k resistive |
| 49 | VID_BIAS | 0.9 | | Internal reference bias for video circuits. A capacitor is connected from this pin to GND. Typically 100nF |
| 37 | TRAP | 2.3 | | Connects trap circuit for subcarrier |
| 2 | SYNC_ID | 2.5 | | Sync detect circuit time constant, resistor and capacitor connection pin |
| 22 23 19 20 16 17 29 42 | LIN_1 RIN_1 LIN_2 RIN_2 LIN_3 RIN_3 LIN_4 RIN_4 | 6.0 (Single) 0.0 (Dual) | | Audio signal inputs |
| 25 26 27 28 30 31 32 | LTV RTV LOUT1 ROUT1 PHONO_L PHONO_R MONO | 6.0 (Single) 0.0 (Dual) | | Audio signal outputs |
| 18 | AUD_BIAS | 6.0 (Single) 0.0 (Dual) | | Internal reference bias for audio circuits. Capacitor connected to GND. (Typically 22μF) Connected directly to GND. |

●Pin Function (3/3)

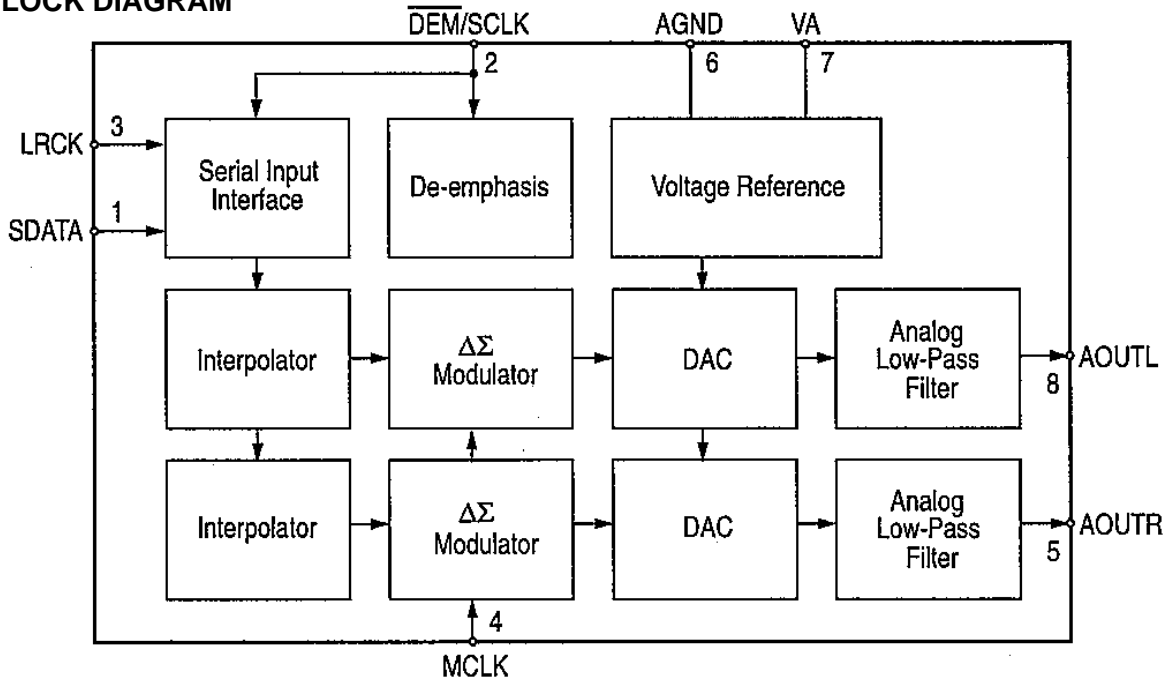
| Pin Num | Symbol | Pin Voltage (V) | Equivalent Circuit | Description |
|----------|----------------------|-----------------|---|--|
| 10 12 | FBLK_IN1 FBLK_IN2 | - |  | Fast blanking signal inputs |
| 9 | TV_FBLK | - |  | Fast blanking signal output |
| 13 | FNC_VCR | - |  | SCART function pin 8 input / output to VCR |
| 11 | FNC_TV | - |  | SCART function pin 8 output to TV |
| 33 | LOGIC | - |  | Open collector logic outputs Typically connect to +5V through 10k resistor. |
| 36 | INTRUPT | - | | |
| 35 | SCL | - |  | I ² C bus clock line |
| 34 | SDA | | | I ² C bus data line |
| 14 | +5V_DIG | 5.0 | | Digital supply |
| 44 | +5V_VOUT | | | Video output supply |
| 48 | +5V_VID | | | Video supply |
| 15 | +12V_DIG | 12.0 | | Digital supply |
| 21 | -5V_GNDA | -5.0 / 0.0 | | Audio supply / ground |
| 24 | +5V/12V_VCCA | 5.0 / 12.0 | | Audio supply |
| 8 | GND_DIG | 0.0 | | Digital ground |
| 40 | GND_VID | 0.0 | | Video ground |

TS5, BCT-1510, BCT-1520, BCT-1530

■ CS4335-KS (MAIN ASSY(4/7) : IC4002)

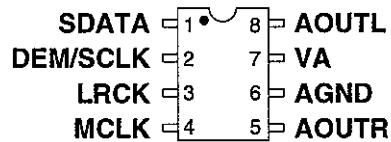
• DAC

● BLOCK DIAGRAM



● PIN DESCRIPTIONS

SERIAL DATA INPUT
DE-EMPHASIS / SCLK
LEFT / RIGHT CLOCK
MASTER CLOCK



ANALOG LEFT CHANNEL OUTPUT
ANALOG POWER
ANALOG GROUND
ANALOG RIGHT CHANNEL OUTPUT

Power Supply Connections

VA - Analog Power, PIN 7

Analog supply. Nominally +5V.

AGND - Analog Ground, PIN 6

Analog ground reference.

Analog Outputs

AOUTL - Analog Left Channel Output, PIN 8

Analog output for the left channel. Typically 3.5V Vpp for a full-scale input signal.

AOUTR - Analog Right Channel Output, PIN 5

Analog output for the right channel. Typically 3.5V Vpp for a full-scale input signal.

Digital Inputs

MCLK - Master Clock Input, PIN 4

The frequency must be 256x, 384x or 512x the input sample rate in Base Rate Mode (BRM) and either 128x or 192x the input sample rate in High Rate mode (HRM).

LRCK - Left/Right Clock, PIN 3

This input determine which channel is currently being input on the Audio Serial Data Input pin, SDATA.

SDATA - Audio Serial Data Input, PIN 1

Two's complement MSB-first serial data is input on this pin. The data is clocked into the CS4335 via internal or external SCLK and the channel is determined by LRCK.

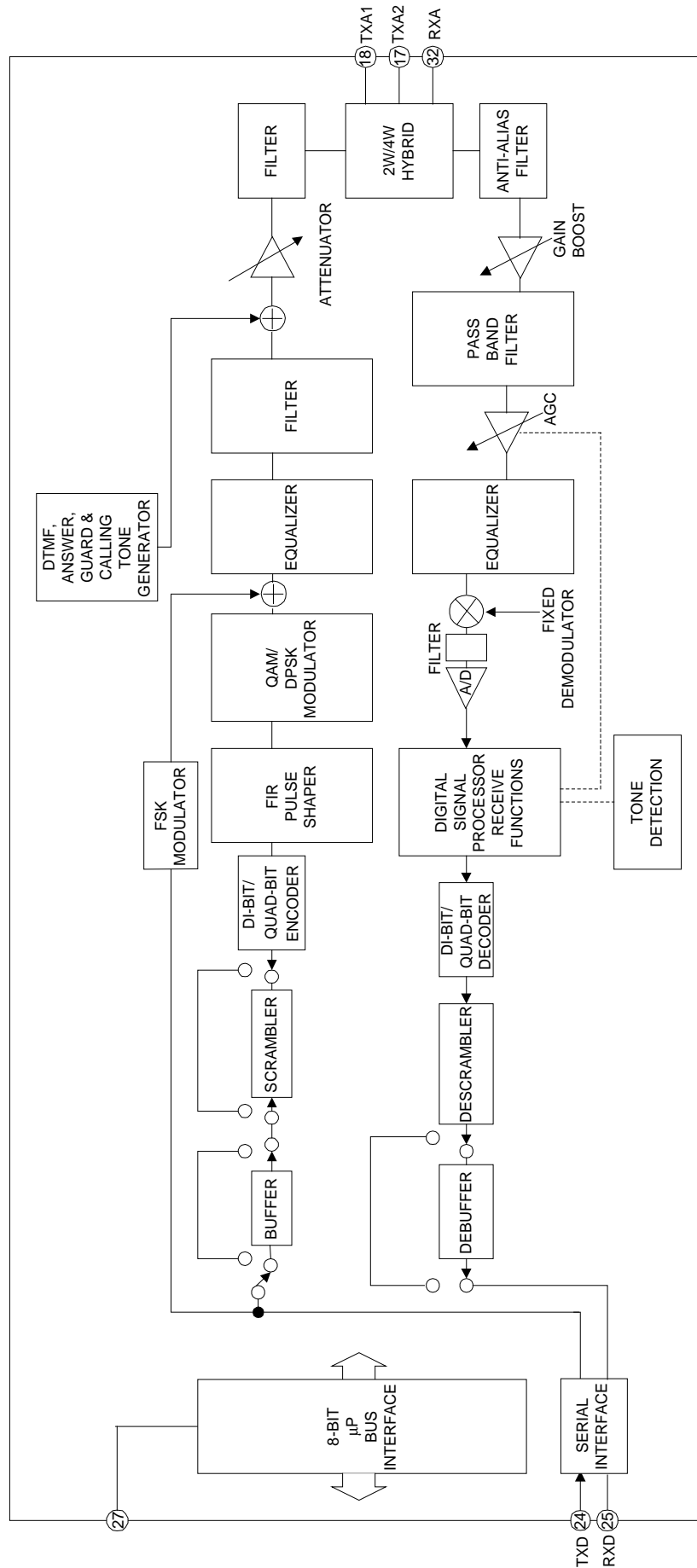
DEM/SCLK - De-emphasis / External serial clock input, PIN 2

A dual-purpose input used for de-emphasis filter control or external serial clock input.

■ 73K324BL-IH (MAIN ASSY(6/7) : IC6005)

• Modem IC

● Block Diagram



TS5, BCT-1510, BCT-1520, BCT-1530

●Pin Function (1/3)

POWER

| NAME | PIN | TYPE | DESCRIPTION |
|------|-----|------|--|
| GND | 1 | I | System ground |
| VDD | 16 | I | Power supply input, 5 V \pm 10% (73K324BL). Bypass with 0.1 and 22 μ F capacitors to GND. |
| VREF | 31 | O | An internally generated reference voltage. Bypass with 0.1 μ F capacitor to ground. |
| ISET | 28 | I | Chip current reference. Sets bias current for op-amps. The chip current is set by connecting this pin to VDD through a 2 M Ω resistor. ISET should be bypassed to GND with a 0.1 μ F capacitor. |

PARALLEL MICROPROCESSOR CONTROL INTERFACE MODE

| | | | |
|-------------------------|------|-----|---|
| ALE | 13 | I | ADDRESS LATCH ENABLE: The falling edge of ALE latches the address on AD0-AD2 and the chip select on &6 . |
| AD0-AD7 | 5-12 | I/O | ADDRESS/DATA BUS: These bi-directional tri-state multiplexed lines carry information to and from the internal registers. |
| $\overline{\text{CS}}$ | 23 | I | CHIP SELECT: A low on this pin during the falling edge of ALE allows a read cycle or a write cycle to occur. AD0-AD7 will not be driven and no registers will be written if $\overline{\text{CS}}$ (latched) is not active. The state of $\overline{\text{CS}}$ is latched on the falling edge of ALE. |
| CLK | 2 | O | OUTPUT CLOCK: This pin is selectable under processor control to be either the crystal frequency (for use as a processor clock) or 16 times the data rate for use as a baud rate clock in DPSK modes only. The pin defaults to the crystal frequency on reset. |
| $\overline{\text{INT}}$ | 20 | O | INTERRUPT: This open drain output signal is used to inform the processor that a detect flag has occurred. The processor must then read the Detect Register to determine which detect triggered the interrupt. $\overline{\text{INT}}$ will stay low until the processor reads the detect register or does a full reset. |
| $\overline{\text{RD}}$ | 15 | I | READ: A low requests a read of the 73K324BL internal registers. Data can not be output unless both $\overline{\text{RD}}$ and the latched $\overline{\text{CS}}$ are active or low. |
| RESET | 30 | I | RESET: An active high signal on this pin will put the chip into an inactive state. All Control Register bits (CR0, CR1, tone) will be reset. The output of the CLK pin will be set to the crystal frequency. An internal pull-down resistor permits power-on-reset using a capacitor to VDD. |

●Pin Function (2/3)

PARALLEL MICROPROCESSOR INTERFACE (continued)

| NAME | PIN | TYPE | DESCRIPTION |
|-----------------|-----|------|--|
| \overline{WR} | 14 | I | WRITE: A low on this informs the 73K324BL that data is available on AD0-AD7 for writing into an internal register. Data is latched on the rising edge of \overline{WR} . No data is written unless both \overline{WR} and the latched \overline{CS} are low. |

SERIAL MICROPROCESSOR CONTROL INTERFACE MODE

| NAME | PIN | TYPE | DESCRIPTION |
|-----------------|-----|------|--|
| AD0-AD2 | 5-7 | I | REGISTER ADDRESS SELECTION: These lines carry register addresses and should be valid during any read or write operation. |
| DATA (AD7) | 12 | I/O | SERIAL CONTROL DATA: Data for a read/write operation is clocked in or out on the falling edge of the \overline{EXCLK} pin. The direction of data flow is controlled by the \overline{RD} pin. \overline{RD} low outputs data. \overline{RD} high inputs data. |
| \overline{RD} | 15 | I | READ: A low on this input informs the 73K324BL that data or status information is being read by the processor. The falling edge of the \overline{RD} signal will initiate a read from the addressed register. The \overline{RD} signal must continue for eight falling edges of \overline{EXCLK} in order to read all eight bits of the referenced register. Read data is provided LSB first. Data will not be output unless the \overline{RD} signal is active. |
| \overline{WR} | 14 | I | WRITE: A low on this input informs the 73K324BL that data or status information has been shifted in through the DATA pin and is available for writing to an internal register. The normal procedure for a write is to shift in data LSB first on the DATA pin for eight consecutive falling edges of \overline{EXCLK} and then to pulse \overline{WR} low. Data is written on the rising edge of \overline{WR} . |

NOTE: The serial control mode is provided by tying ALE high and \overline{CS} low. In this configuration AD7 becomes DATA and AD0, AD1 and AD2 become the register address.

TS5, BCT-1510, BCT-1520, BCT-1530

●Pin Function (3/3)

DTE USER

| NAME | PIN | TYPE | DESCRIPTION |
|-------|-----|------|--|
| EXCLK | 22 | I | EXTERNAL CLOCK: This signal is used in synchronous transmission when the external timing option has been selected. In the external timing mode the rising edge of EXCLK is used to strobe synchronous DPSK transmit data applied to on the TXD pin. Also used for serial control interface. |
| RXCLK | 26 | O | RECEIVE CLOCK: The falling edge of this clock output is coincident with the transitions in the serial received data output. The rising edge of RXCLK can be used to latch the valid output data. RXCLK will be valid as long as a carrier is present. |
| RXD | 25 | O | RECEIVED DATA OUTPUT: Serial receive data is available on this pin. The data is always valid on the rising edge of RXCLK when in synchronous mode. RXD will output constant marks if no carrier is detected. |
| TXCLK | 21 | O | TRANSMIT CLOCK: This signal is used in synchronous transmission to latch serial input data on the TXD pin. Data must be provided so that valid data is available on the rising edge of the TXCLK. The transmit clock is derived from different sources depending upon the synchronization mode selection. In internal mode the clock is generated internally. In external mode TXCLK is phase locked to the EXCLK pin. In slave mode TXCLK is phase locked to the RXCLK pin. TXCLK is always active. |
| TXD | 24 | I | TRANSMIT DATA INPUT: Serial data for transmission is applied on this pin. In synchronous modes, the data must be valid on the rising edge of the TXCLK clock. In asynchronous modes (1200/600 bps or 300/1200 baud) no clocking is necessary. DPSK data must be 1200/600 bps +1%, -2.5% or +2.3%, -2.5 % in extended over speed mode. |

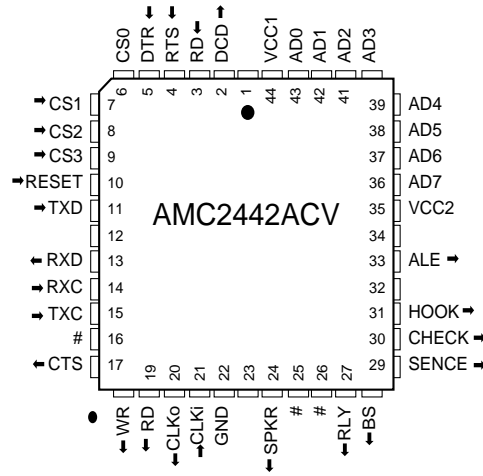
ANALOG INTERFACE AND OSCILLATOR

| NAME | PIN | TYPE | DESCRIPTION |
|------------------------|---------|------|--|
| RXA | 32 | I | Received modulated analog signal input from the telephone line interface. |
| TXA1 / TXA 2 | 18 / 17 | O | (differential) Transmit Analog. These pins provide the analog output signals to be transmitted to the telephone line. The drivers will differentially drive the impedance of the line transformer and the line matching resistor. An external hybrid can also be built using TXA1 as a single ended transmit signal. |
| XTL1 / XTL2 | 3 / 4 | I | These pins are for the internal crystal oscillator requiring a 11.0592 MHz parallel mode crystal. Load capacitors should be connected from XTL1 and XTL2 to ground. XTL2 can also be driven from an external clock. |
| $\overline{\text{OH}}$ | 27 | O | OFF-HOOK RELAY DRIVER: This signal is an open drain output capable of sinking 40 mA and is used for controlling a relay. The output is the complement of the OH register bit in the ID Register. |

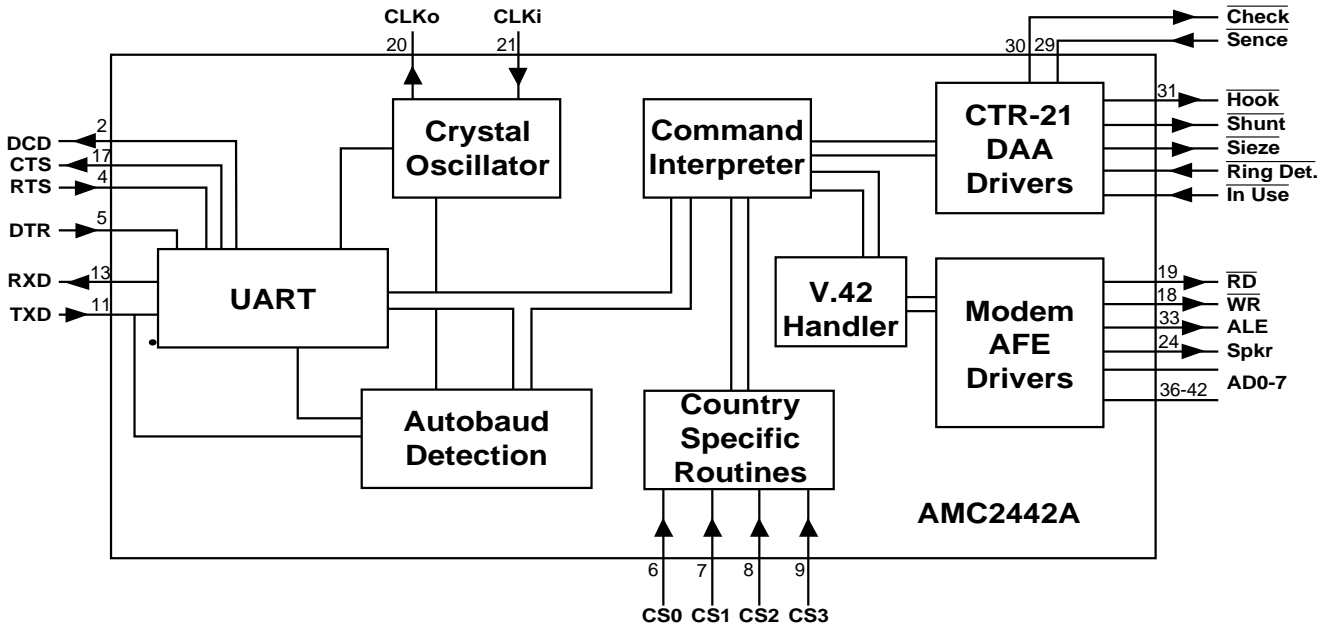
■ AMC2442ACVF(0.87) (MAIN ASSY(6/7) : IC6006)

- Modem Controller
- Pinouts/Blockdiagram

Pinouts



BLOCK DIAGRAM



TS5, BCT-1510, BCT-1520, BCT-1530

●Pin Function

| PIN NUMBER | Pin Name | I/O TYPE | Description |
|------------|----------|----------|---|
| 2 | DCD | Output | DTE Data Carrier Detect output signal. Indicates modem has detected carrier. |
| 3 | RING | Input | Ring detector input. This pin assumes that a half wave opto coupler is used in the telephone line DAA circuit in the frequency detection algorithm. |
| 4 | RTS | Input | DTE Ready To Send input signal. Used for hardware flow control. |
| 5 | DTR | Input | DTE Data Terminal Ready input signal. Used to enable modem device |
| 6 | CS0 | Input | Country Selection bit 0 (Internal pull up) |
| 7 | CS1 | Input | Country Selection bit 1 (Internal pull up) |
| 8 | CS2 | Input | Country Selection bit 2 (Internal pull up) |
| 9 | CS3 | Input | Country Selection bit 3 (Internal pull up) |
| 10 | RESET | Input | Reset signal to the AMC2442A Controller. Active High. |
| 11 | TXD | Input | DTE Transmit Data Pin. All data communication from the DTE connects via this pin. |
| 13 | RXD | Output | DTE Receive Data Pin. All data communication to the DTE connects via this pin. |
| 14 | RXC | Input | Receiver Clock Input from AFE. Used in PSK, QAM and synchronous data mode. |
| 15 | TXC | Input | Transmitter Clock Input from AFE. Used in PSK, QAM and synchronous data mode. |
| 16 | Free | I/O | DO NOT CONNECT |
| 17 | CTS | Output | DTE Clear To Send output signal. Used for hardware flow control. |
| 18 | WR | Output | Write signal to AFE. Goes active low whenever the SMC wishes to write to the AFE |
| 19 | RD | Output | Read signal to AFE. Goes active low whenever the SMC wishes to read from the AFE |
| 20 | CLKo | Output | Buffered Clock output signal. Also used as a crystal drive signal when required. |
| 21 | CLKi | Input | Clock input signal. The SMC requires an 11.0592MHz signal on this pin. |
| 22 | GND | Power | Controller Ground connection |
| 24 | SPKR | Output | Speaker Enable drive |
| 25 | Free | I/O | DO NOT CONNECT |
| 26 | Free | I/O | DO NOT CONNECT |
| 27 | RLY | Output | DAA Line Seize relay control. Used if DPCO relay is used to share the telephone with a standard telephone instrument. |
| 28 | BS | Output | DAA Bell Shunt control. Used during LD dialling to provide a low impedance loop. |
| 29 | SENSE | Input | Line-In-Use detection input. |
| 30 | CHECK | Output | Line-In-Use circuit drive pin. |
| 31 | HOOK | Output | DAA Hook switch control. Delayed from Seize to allow for a low cost opto coupler. |
| 32 | NC | I/O | DO NOT CONNECT |
| 33 | LATCH | Output | ALE signal to AFE. Goes active high to latch an address into the AFE |
| 35 | VCC2 | Power | Auxiliary power supply pin. |
| 36->43 | AD7->AD0 | I/O | Multiplex Address / Data bus connections to AFE. |
| 44 | VCC1 | Power | Main power supply pin. |
| 1 | NC | I/O | DO NOT CONNECT |
| 12 | NC | I/O | DO NOT CONNECT |
| 23 | NC | I/O | DO NOT CONNECT |
| 34 | NC | I/O | DO NOT CONNECT |

■ PE5181A (MAIN ASSY(7/7) : IC7001)

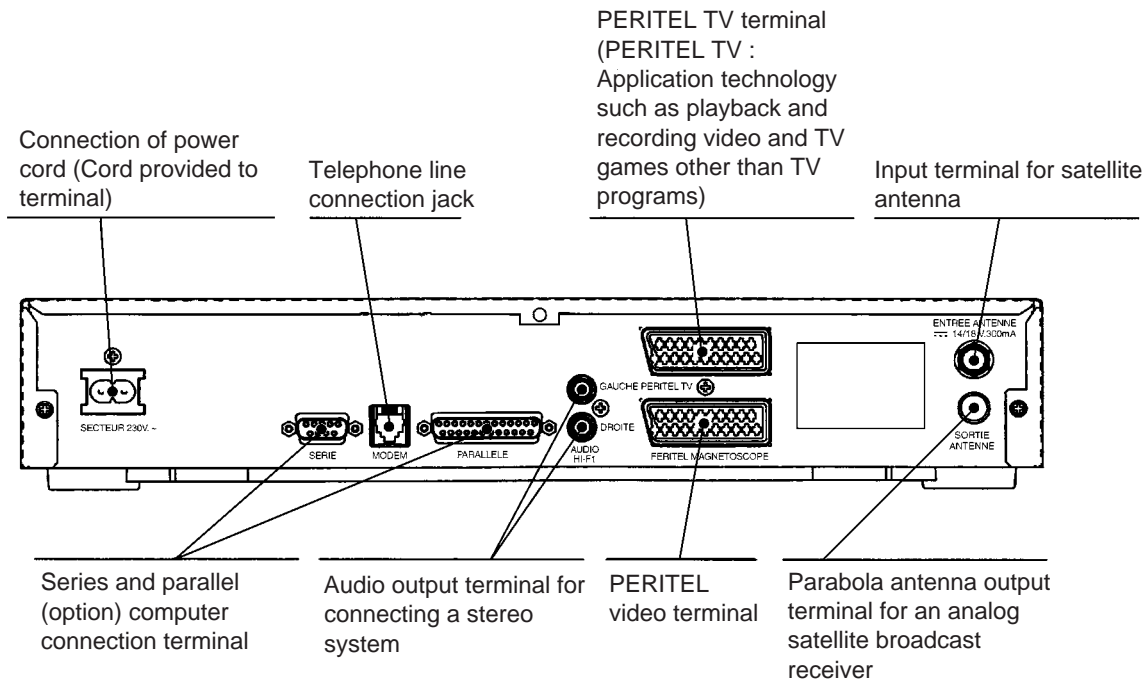
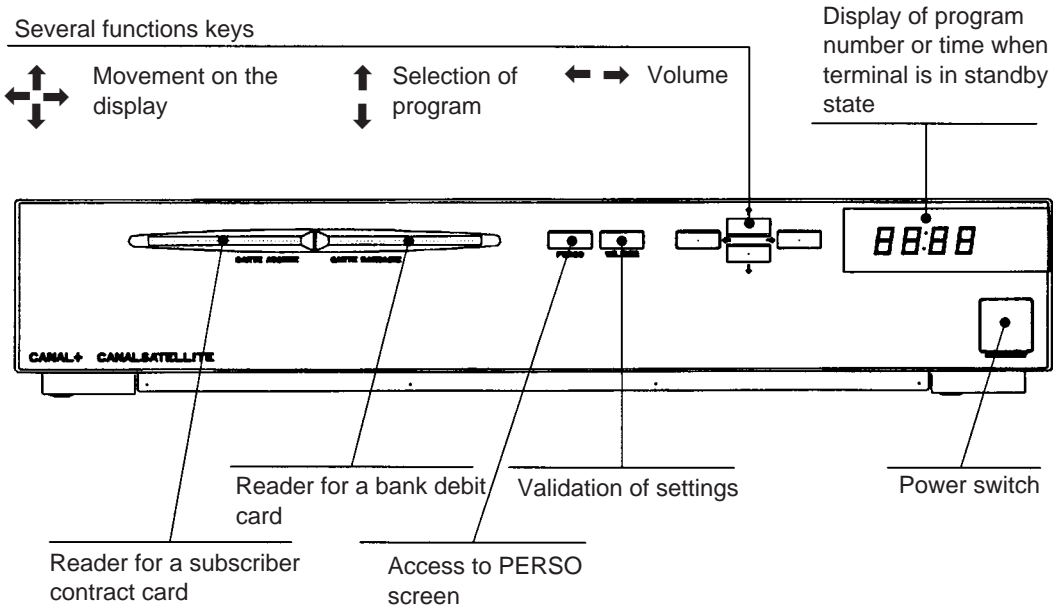
• Sub CPU

● Pin Function

| No. | Mark | Pin Name | I/O | Active | Pin Function |
|-----|-------|-----------------|-----|--------|---|
| 1 | P50 | LED10 | O | Low | Front LED, seg |
| 2 | P51 | LED11 | O | Low | Front LED, seg |
| 3 | P52 | LED12 | O | Low | Front LED, seg |
| 4 | P53 | LED13 | O | Low | Front LED, seg |
| 5 | P54 | LED14 | O | Low | Front LED, seg |
| 6 | P55 | LED15 | O | Low | Front LED, seg |
| 7 | P56 | LED16 | O | Low | Front LED, seg |
| 8 | P57 | LED17 | O | Low | Front LED, seg |
| 11 | P30 | IRQ_TEIDEN | O | Low | Power failure interruption (L output only at power failure) |
| 12 | P31 | IRQ_KEY | O | Low | Remote controller / key interruption |
| 13 | SDA0 | I2C_SDA | O | | I2C_SDA Output |
| 14 | SCL0 | I2C_SCL | I | | I2C_SCL Input |
| 15 | P34 | × | O | | |
| 16 | P35 | × | O | | |
| 17 | P36 | × | O | | |
| 18 | P20 | × | O | | |
| 19 | P21 | × | O | | |
| 20 | P22 | × | O | | |
| 21 | P23 | × | O | | |
| 22 | P24 | × | O | | |
| 23 | P25 | SUB_MUTE | O | Low | Power_off Mute |
| 26 | P17 | TEST | I | Low | For production line |
| 27 | P16 | RC_MM | I | Any | RC_MM Selection (H : Disabel, L : Enable) |
| 28 | P15 | pioneer/philips | I | Any | Remote control code selection (H : Philips, L : Pioneer) |
| 29 | P14 | XHALT | I | Low | Power failure process completion flag (L : Complete, H : Normaly) |
| 30 | P13 | × | I | | For AGC Reading |
| 31 | P12 | KEY02, MENU | I | Low | Front key input |
| 32 | P11 | KEY01, OK | I | Low | Front key input |
| 33 | P10 | KEY00, ← | I | Low | Front key input |
| 43 | INTP0 | REM | I | High | Remote control input |
| 44 | INTP1 | AC_CLK | I | Toggle | Power failuer detection clock (Both edge detectin) |
| 45 | P02 | LNB_POW0 | O | Any | LNB inernal / external (H : internal, L : external) |
| 46 | P03 | LNB_POW1 | O | Any | LNB 18V / 13V (H : 18V, L : 13V) |
| 47 | TI00 | REM | I | High | Remote control input |
| 48 | P71 | KEY, ↑ | I | | Front key input |
| 49 | P72 | × | O | | |
| 50 | P73 | XSTBY | O | Low | Stand-by signal (H output at full power) |
| 51 | P74 | KEY, ↓ | I | | Front key input |
| 52 | P75 | KEY, → | I | | Front key input |
| 53 | P64 | XRESET_OMEGA | O | Low | STi5512 Reset |
| 54 | P65 | RESET_CHDEC | O/I | High | Link IC Reset |
| 55 | P66 | × | O | | |
| 56 | P67 | × | O | | |
| 57 | P40 | × | O | | |
| 58 | P41 | × | O | | |
| 59 | P42 | × | O | | |
| 60 | P43 | × | O | | |
| 61 | P44 | LED03 | O | Low | Front LED, dig |
| 62 | P45 | LED02 | O | Low | Front LED, dig |
| 63 | P46 | LED01 | O | Low | Front LED, dig |
| 64 | P47 | LED00 | O | Low | Front LED, dig |

8. PANEL FACILITIES AND SPECIFICATIONS

8.1 PANEL FACILITIES



8.2 SPECIFICATIONS

RF

| | |
|---|--|
| Moduration Method | QPSK |
| Symbol Rate | 22, 27, 27.5Mbaud |
| Inner Code Rate | 1/2, 2/3, 3/4, 5/6 |
| Error Correction | Viterbi+Reed-solomon |
| Frequency Range | 950 to 2150MHz |
| Input Level | -65 to -25dBm |
| Max. Input Level | 0dBm |
| Return Loss | 8.0dB min. |
| Spurious Signal and Local Oscillator Level | -63dBm max. |
| LNB Power Supply | Ver. : 12.5V to 14V Hor. : 17V to 19V |

VIDEO

| | |
|--------------------------|----------------------|
| S/N | 55dB min. |
| Responce Flatness | -2 ± 2.5dB at 4.7MHz |
| Differential Gain | 10% max. |
| Differential Phase | 5deg max. |
| Chroma Delay | ±40nsec max. |
| Non Linearity | 5% max. |

AUDIO

| | |
|--------------------------|-----------------------|
| S/N | 72dB min. |
| Responce flatness | ±0.5dB at 20 to 20kHz |
| Channel Separation | 50dB min. |

DATA COMMUNICATION

| | |
|--------------------------|----------|
| Serial Interface | RS-232C |
| Parallel Interface | IEEE1284 |
| Modem | V23 |
| IC Card | ISO-7816 |

GENERAL

| | |
|-------------------------|----------------------------|
| Power Requirement | AC230V/50Hz |
| Power Consumption | 18W typ. |
| Dimensions | 380 (W) X 253 (D) X 71 (H) |
| Net Weight | 2.3kg |