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Service Manual

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PHILIPS

1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

Notes:

- Figures can deviate due to the different set executions.
- Specifications are indicative (subject to change).

1.1 Technical Specifications

1.1.1 Vision

Display type	:	CRT, Real Flat
Screen size	:	27" (69 cm), 4:3
Tuning system	:	PLL
Presets/channels	:	181
Tuner bands	:	Full-Cable
TV color systems	:	ATSC
	:	NTSC
Video playback	:	NTSC
Aerial input	:	75 ohm, F-type
Cable	:	Unscrambled Digital Cable -QAM

1.1.2 Sound

Sound systems	:	Stereo BTSC
Maximum power (W_{RMS})	:	2 x 2

1.1.3 Miscellaneous

Power supply:		
- Mains voltage (V_{AC})	:	108-132
- Mains frequency (Hz)	:	50 / 60
Ambient conditions:		
- Temperature range (°C)	:	+5 to +40
- Maximum humidity	:	90% R.H.
Power consumption (values are indicative)		
- Normal operation (W)	:	≈ 120
- Stand-by (W)	:	< 1
Dimensions (WxHxD inch)	:	29.2 x 23 x 19.1
Weight (lb)	:	94.8

1.2 Side and Rear Connections

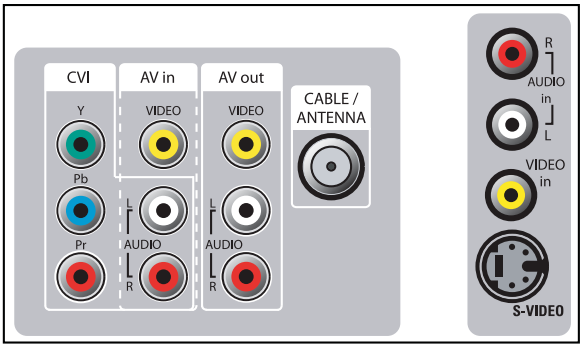

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Figure 1-1 Side and rear I/O connections

Note: The following connector colour abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, and Ye= Yellow.

1.2.1 Side Connections

Audio / Video In

Ye	- Video (CVBS)	1 V_pp / 75 ohm
Wh	- Audio - L	0.2 V_rms / 10 kohm
Rd	- Audio - R	0.2 V_rms / 10 kohm

S-Video

1	- Ground	GND
2	- Ground	GND
3	- Y	1 V_pp / 75 ohm
4	- C	0.3 V_pp / 75 ohm

1.2.2 Rear Connections

CVI (YPbPr In)

Gn	- Y	0.7 V_pp / 75 ohm
Bu	- Pb	0.7 V_pp / 75 ohm
Rd	- Pr	0.7 V_pp / 75 ohm
Wh	- Audio - L	0.5 V_rms / 10 kohm
Rd	- Audio - R	0.5 V_rms / 10 kohm

AV In

Ye	- Video (CVBS)	1 V_pp / 75 ohm
Wh	- Audio - L	0.5 V_rms / 10 kohm
Rd	- Audio - R	0.5 V_rms / 10 kohm

AV Out

Ye	- Video (CVBS)	1 V_pp / 75 ohm
Wh	- Audio - L	0.5 V_rms / 10 kohm
Rd	- Audio - R	0.5 V_rms / 10 kohm

Aerial In

	- F-type	Coax, 75 ohm

1.3 Chassis Overview

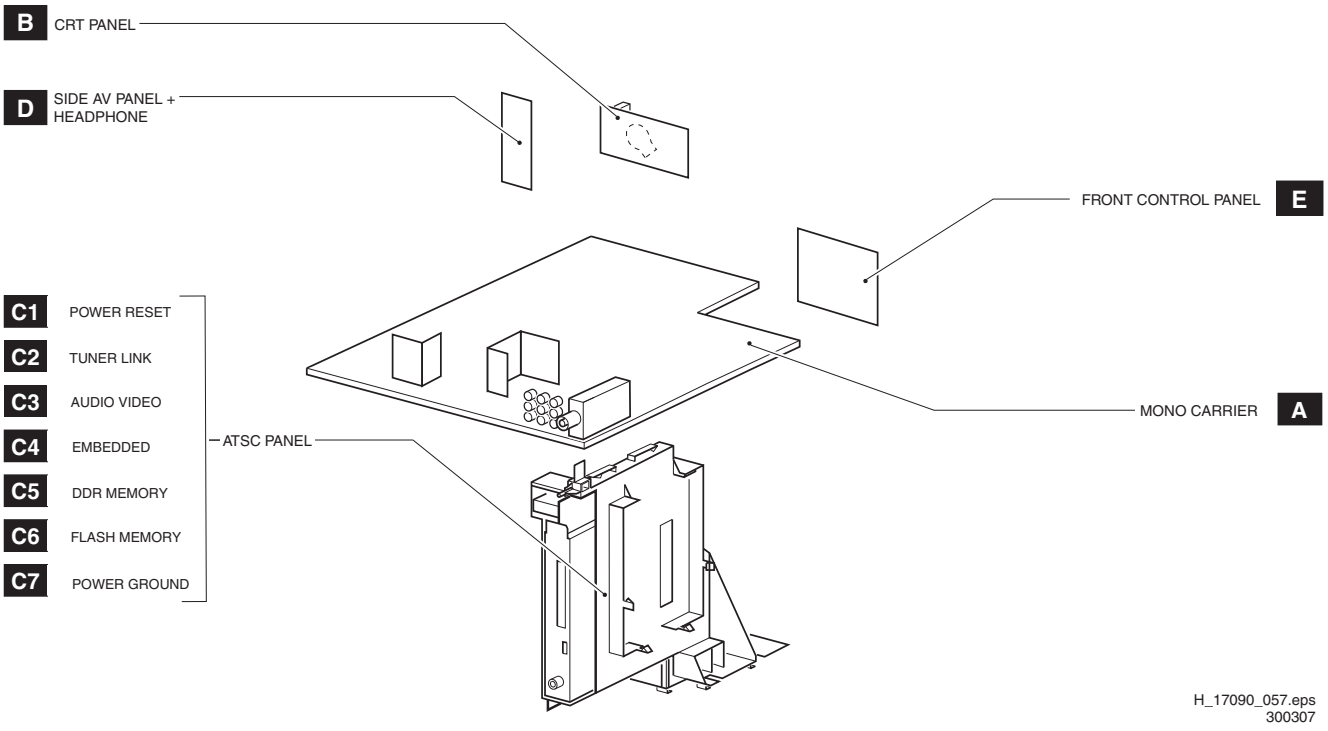

Figure 1-2 PWB/CBA locations

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

2.1 Safety Instructions

Safety regulations require the following **during** a repair:

- Connect the set to the Mains/AC Power via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.
- Wear safety goggles when you replace the CRT.

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:

- General repair instruction: as a strict precaution, we advise you to re-solder the solder connections through which the horizontal deflection current flows. In particular this is valid for the:
  1. Pins of the line output transformer (LOT).
  2. Fly-back capacitor(s).
  3. S-correction capacitor(s).
  4. Line output transistor.
  5. Pins of the connector with wires to the deflection coil.
  6. Other components through which the deflection current flows.

Note: This re-soldering is advised to prevent bad connections due to metal fatigue in solder connections, and is therefore only necessary for television sets more than two years old.

- Route the wire trees and EHT cable correctly and secure them with the mounted cable clamps.
- Check the insulation of the Mains/AC Power lead for external damage.
- Check the strain relief of the Mains/AC Power cord for proper function, to prevent the cord from touching the CRT, hot components, or heat sinks.
- Check the electrical DC resistance between the Mains/AC Power plug and the secondary side (only for sets that have a Mains/AC Power isolated power supply):
  1. Unplug the Mains/AC Power cord and connect a wire between the two pins of the Mains/AC Power plug.
  2. Set the Mains/AC Power switch to the "on" position (keep the Mains/AC Power cord unplugged!).
  3. Measure the resistance value between the pins of the Mains/AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 Mohm and 12 Mohm.
  4. Switch "off" the set, and remove the wire between the two pins of the Mains/AC Power plug.
- Check the cabinet for defects, to prevent touching of any inner parts by the customer.

2.2 Maintenance Instructions

We recommend a maintenance inspection carried out by qualified service personnel. The interval depends on the usage conditions:

- When a customer uses the set under normal circumstances, for example in a living room, the recommended interval is three to five years.
- When a customer uses the set in an environment with higher dust, grease, or moisture levels, for example in a kitchen, the recommended interval is one year.
- The maintenance inspection includes the following actions:
  1. Perform the “general repair instruction” noted above.
  2. Clean the power supply and deflection circuitry on the chassis.
  3. Clean the picture tube panel and the neck of the picture tube.

2.3 Warnings

- In order to prevent damage to ICs and transistors, avoid all high voltage flashovers. In order to prevent damage to the picture tube, use the method shown in figure “Discharge picture tube”, to discharge the picture tube. Use a high voltage probe and a multi-meter (position V_{DC}). Discharge until the meter reading is 0 V (after approx. 30 s).

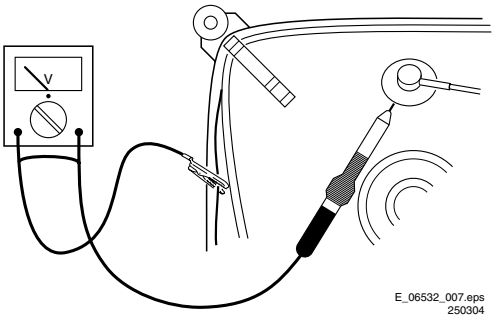

Figure 2-1 Discharge picture tube

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ⚠). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and prevents circuits from becoming unstable.

2.4 Notes

2.4.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏚), or hot ground (⏚), depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).
- Where necessary, measure the waveforms and voltages with (⊓) and without (⊼) aerial signal. Measure the voltages in the power supply section both in normal operation (⏻) and in stand-by (⏻). These values are indicated by means of the appropriate symbols.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

2.4.2 Schematic Notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are given in micro-farads (μ= x10^{-6}), nano-farads (n= x10^{-9}), or pico-farads (p= x10^{-12}).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Spare Parts List. Therefore, always check this list when there is any doubt.

2.4.3 Lead-free Soldering

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
  - To reach a solder-tip temperature of at least 400°C.
  - To stabilize the adjusted temperature at the solder-tip.
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360°C - 380°C is reached and stabilized at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch “off” unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly **to avoid** mixed regimes. If this cannot be avoided, carefully clear the solder-joint from old tin and re-solder with new tin.

2.4.4 Alternative BOM identification

The **third digit** in the serial number (example: BF**2**A0635000001) indicates the number of the alternative B.O.M. (Bill Of Materials) that has been used for producing the specific TV set. In general, it is possible that the same TV model on the market is produced with e.g. two different types of displays, coming from two different suppliers. This will then result in sets which have the same CTN (Commercial Type Number; e.g. 28PW9515/12) but which have a different B.O.M. number.
By looking at the third digit of the serial number, one can identify which B.O.M. is used for the TV set he is working with. If the third digit of the serial number contains the number “1” (example: BF**1**A063500001), then the TV set has been manufactured according to B.O.M. number 1. If the third digit is a “2” (example: BF**2**A0635000001), then the set has been produced according to B.O.M. no. 2. This is important for ordering the correct spare parts!
For the third digit, the numbers 1...9 and the characters A...Z can be used, so in total: 9 plus 26= 35 different B.O.M.s can be indicated by the third digit of the serial number.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 1 and 2 refer to the production center (e.g. AG is Bruges), digit 3 refers to the B.O.M. code, digit 4 refers to the Service version change code, digits 5 and 6 refer to the production year, and digits 7 and 8 refer to production week (in example below it is 2006 week 17). The 6 last digits contain the serial number.

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Figure 2-2 Serial number (example)

2.4.5 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages**. While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3. Directions for Use

You can download this information from the following websites:
http://www.philips.com/support
http://www.p4c.philips.com

4. Mechanical Instructions

Index of this chapter:

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

4.1 Set Disassembly

Follow the disassemble instructions in described order.

4.1.1 Rear Cover Removal

Warning: disconnect the mains power cord before you remove the rear cover.

1. Remove all the fixation screws of the rear cover [1] and [2].
2. Now, pull the rear cover backwards and remove it.

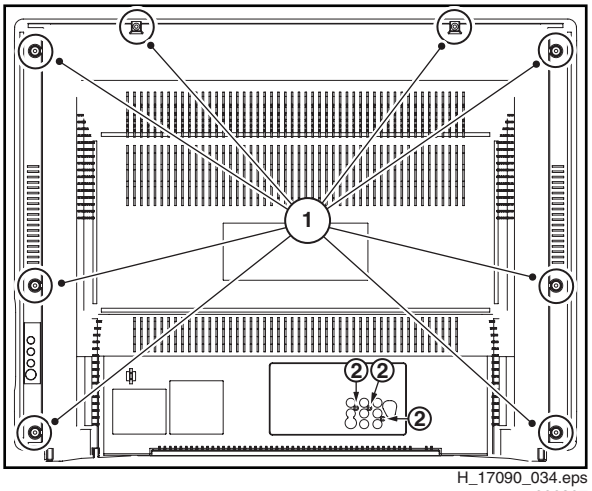

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Figure 4-1 Rear Cover removal

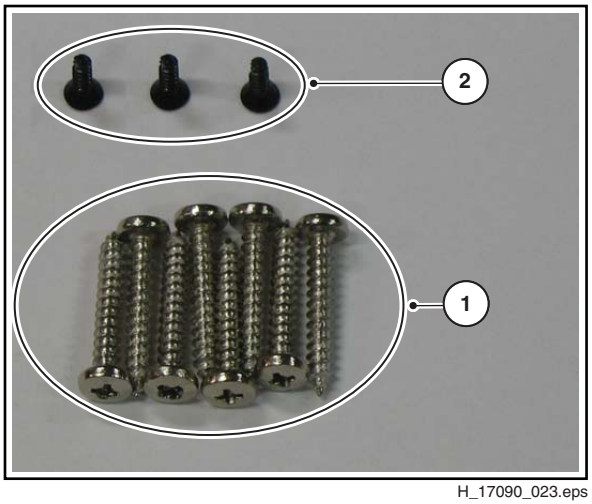

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Figure 4-2 Rear Cover fixation screws

4.2 Assy / Board Removal

Sometimes, it can be necessary to swap a complete assy or Printed Wiring Board (PWB). How that can be done is explained below.

4.2.1 Side IO/Keyboard Panel Removal

1. Remove the fixation screws [3].
2. Remove the module from the TV.
3. If necessary, release the two fixation clamps [4] at the underside of the panel, and lift the button frame from the panel.

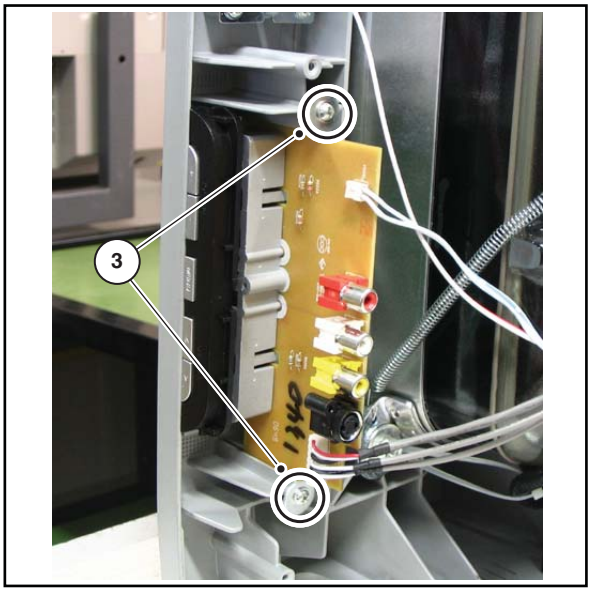

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Figure 4-3 Side-IO/Keyboard panel removal

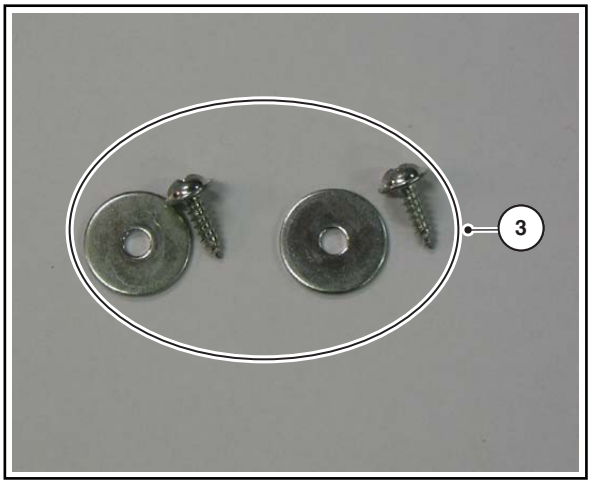

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Figure 4-4 Side-IO/Keyboard module fixation screws

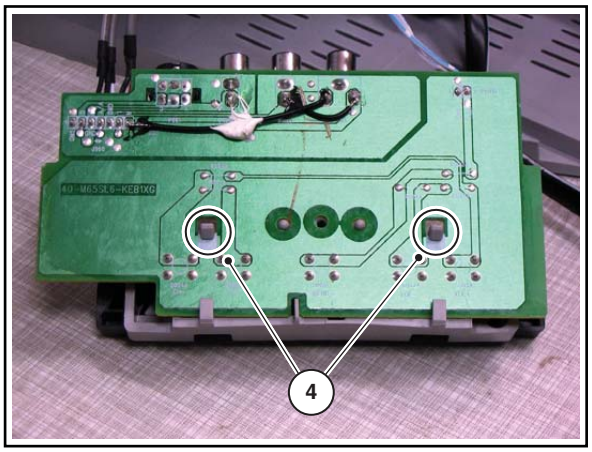

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Figure 4-5 Button frame removal

4.2.2 ATSC Panel Removal

1. Pull the fixation clamp upwards [5].
2. At the same time, slide the module backwards [6], away from the CRT.
3. To remove the panel from its bracket, remove fixation screw [7] and pull away fixation brackets [8]. Lift the panel from the bracket, it hinges at the underside.

When defective, replace the whole module.

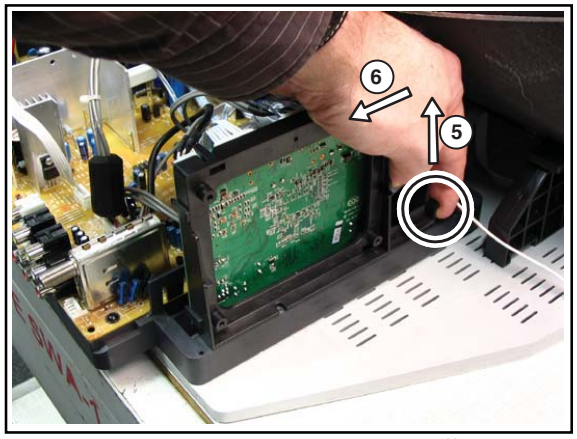

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Figure 4-6 ATSC panel removal [1/2]

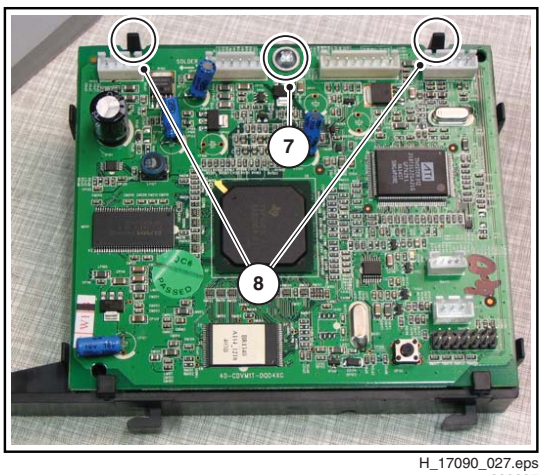

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Figure 4-7 ATSC panel removal [2/2]

4.2.3 Mono Carrier Removal

1. First, disconnect the strain relief of the AC power cord [9].
2. Disconnect all the necessary cables.
3. To remove the Mono Carrier; slide the whole panel backwards [10] (= away from the front). When stopped, pull it upwards [11] at the front corners of the bracket (towards the CRT), and at the same time, move it away from the CRT [12].

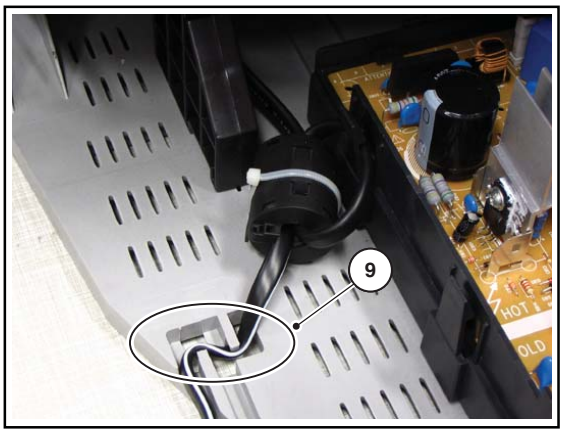

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Figure 4-8 Mono carrier removal [1/2]

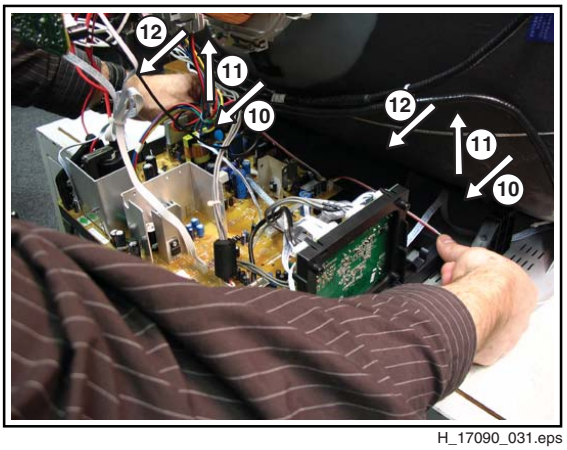

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Figure 4-9 Mono carrier removal [2/2]

4.2.4 IR/LED Panel Removal

1. Remove the fixation screws [13].
2. Remove the module from the TV.

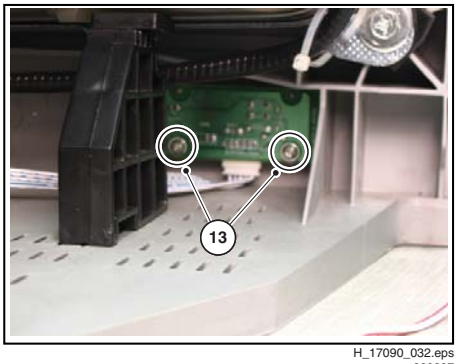

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Figure 4-10 IR/LED panel removal

4.3 Service Positions

For easy measurements, you can use the following service position.

4.3.1 Service Position Mono Carrier

Removing cables and repostioning the panel

For better accessibility of the Mono Carrier, do the following (see Figure “Service position”):

1. If necessary, disconnect some cables, and move the panel somewhat to the left. Then flip it 90 degrees with its components towards the CRT [14].

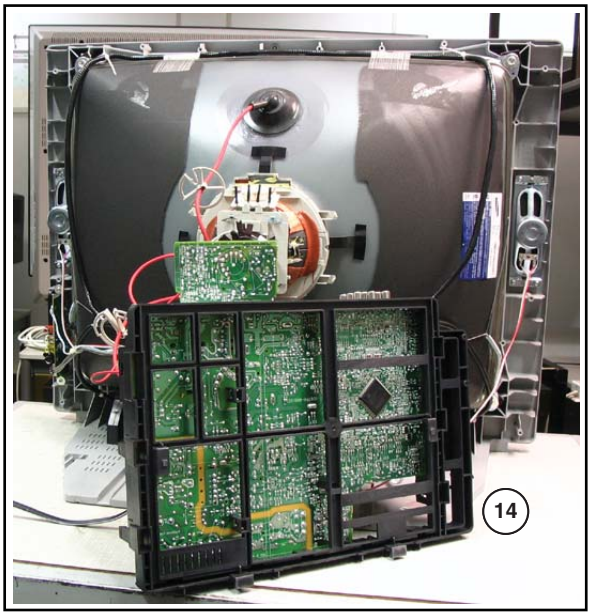

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Figure 4-11 Service position

4.4 Set Re-assembly

To re-assemble the whole set, do all processes in reverse order.

Be sure that, before the rear cover is mounted:

- The mains cord is postioned correctly in its guiding brackets (make sure that the strain relief is replaced in its correct position and that it will function correctly!).
- All wires/cables are returned in their original positions.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

5.1 Service Modes

For an explanation of the Factory Mode, see chapter 8 “Alignments”.

5.2 Error Codes

Not applicable for this chassis.

5.3 Fault Finding

5.3.1 Can Not Power “On”

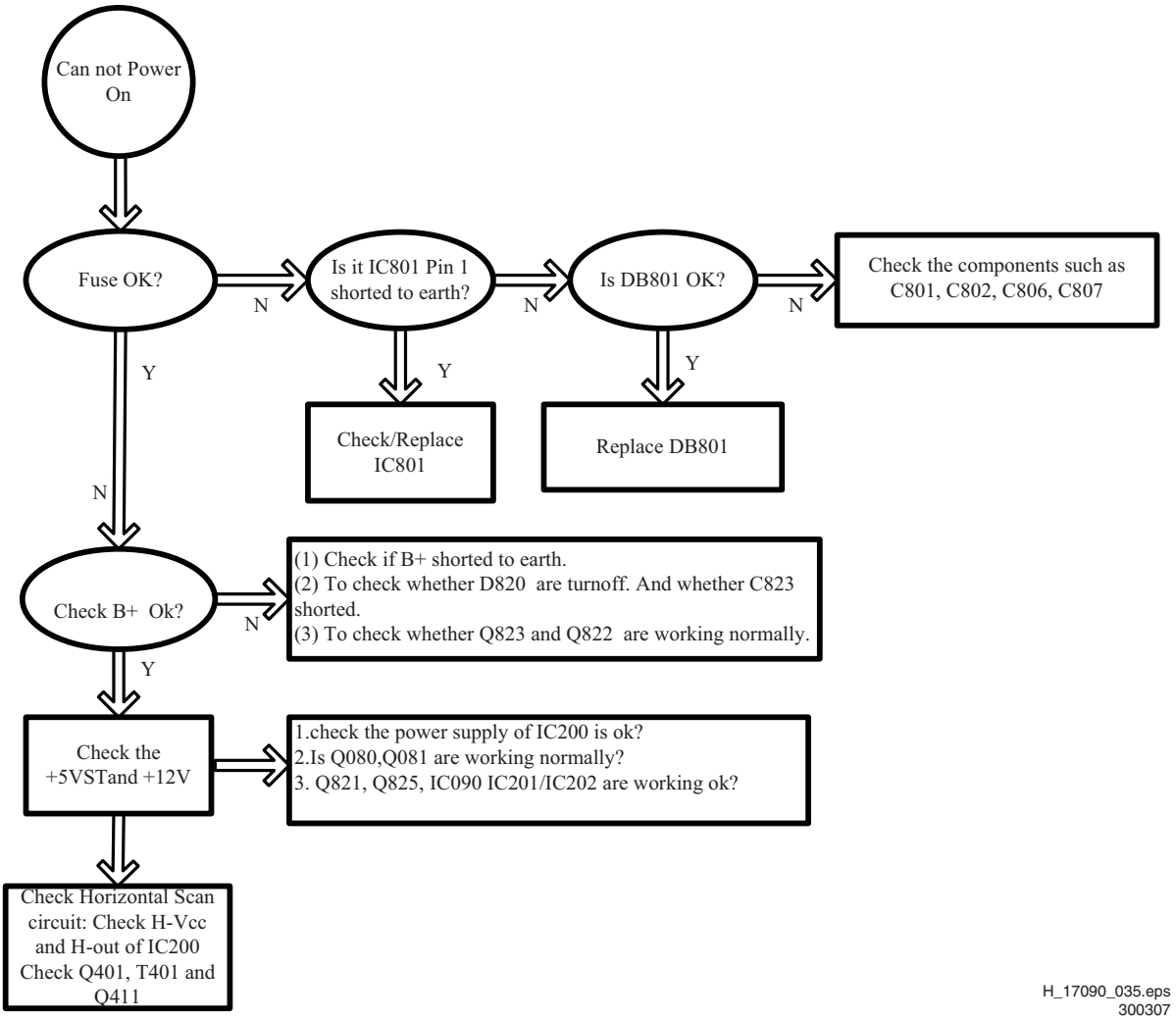

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Figure 5-1 Flow chart “Can not power on”.

5.3.2 No Raster, Sound OK

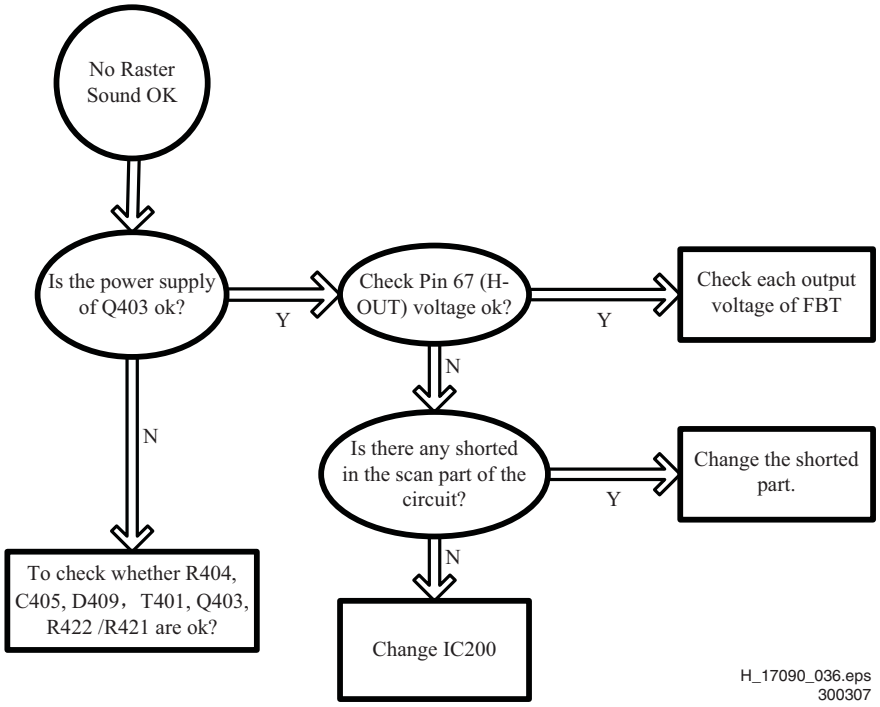


Figure 5-2 Flow chart "No Raster, Sound OK".

5.3.3 No TV (NTSC) Picture, No Sound, Raster OK

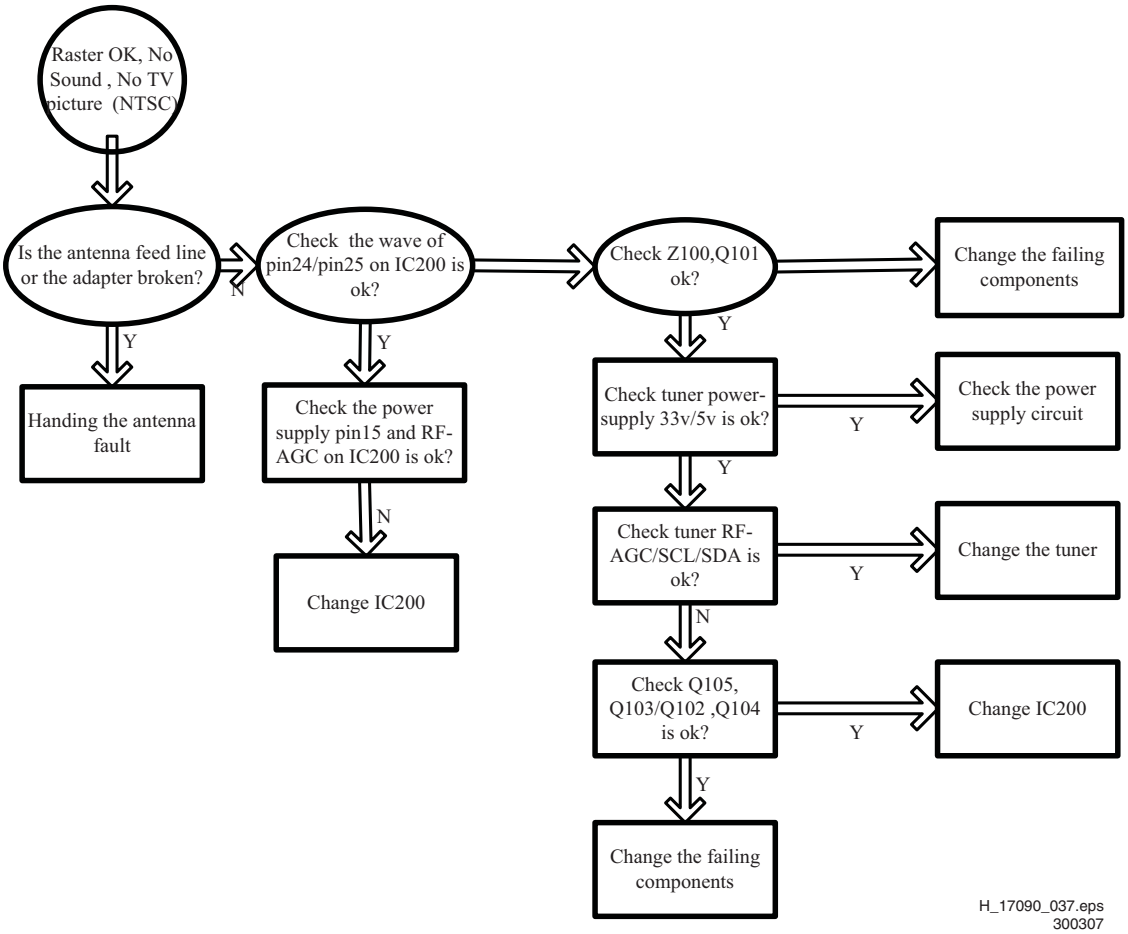


Figure 5-3 Flow chart "No TV (NTSC) Picture, No Sound, Raster OK".

5.3.4 No AV Picture, Sound OK, Raster OK

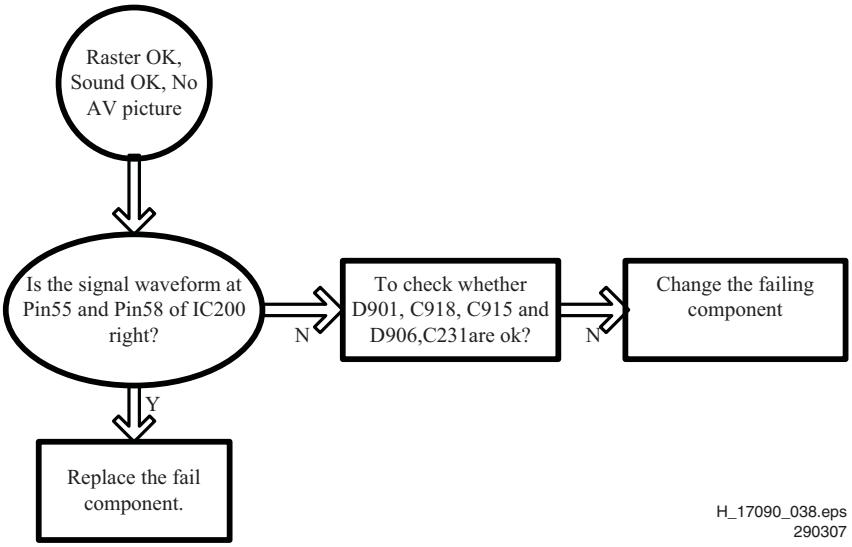


Figure 5-4 Flow chart "No AV Picture, Sound OK, Raster OK".

5.3.5 No TV (ATSC) Picture, No Sound, Raster OK

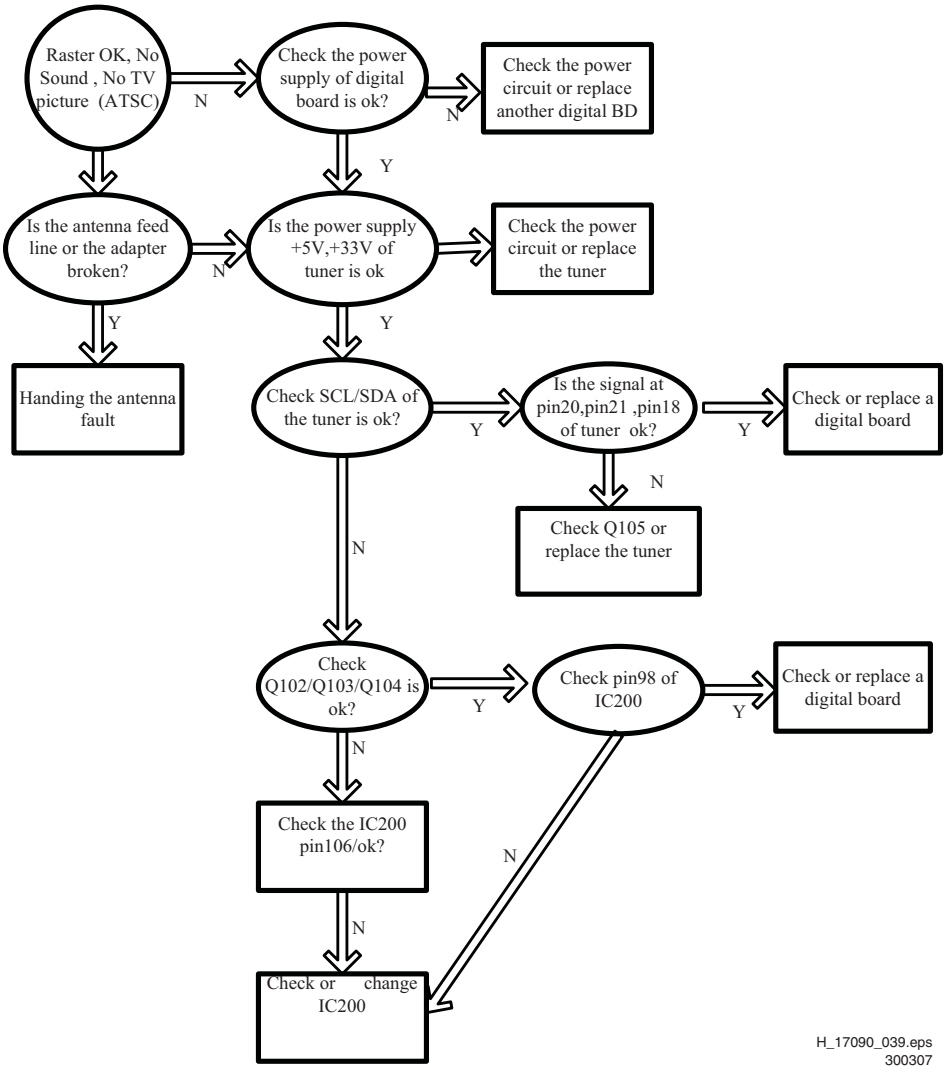


Figure 5-5 Flow chart "No TV (ATSC) Picture, No Sound, Raster OK".

5.3.6 Some Waveforms:

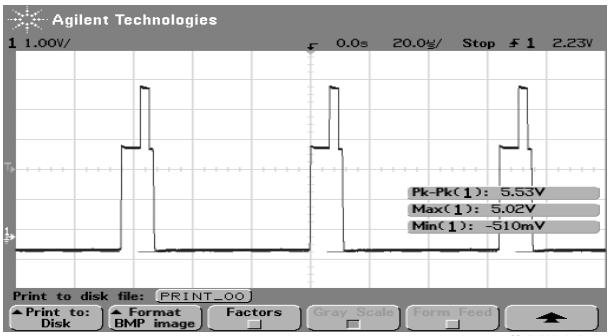


Figure 5-6 Pin 66 of IC200

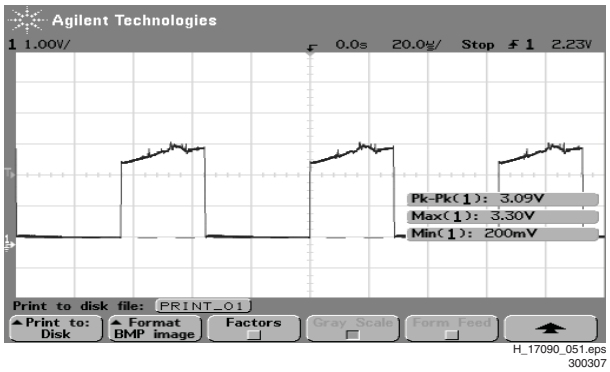


Figure 5-7 H_out pin 67 of IC200

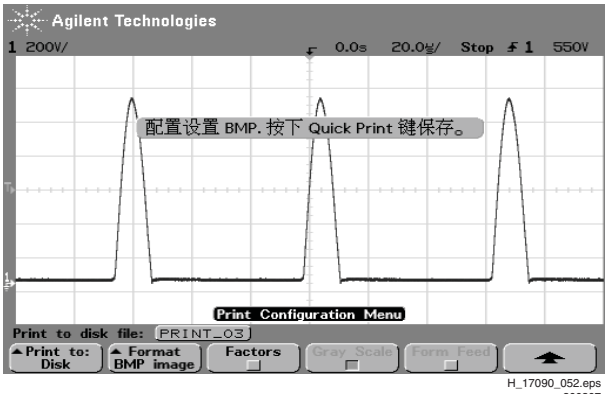


Figure 5-8 Q405 C

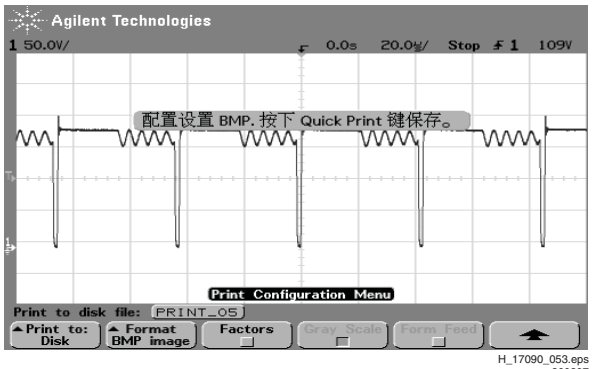


Figure 5-9 Pin 1 of IC801 when stand-by

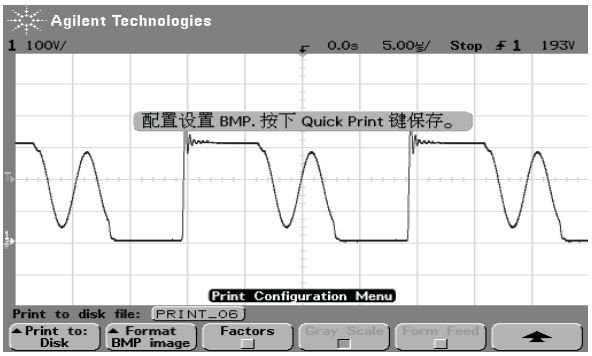


Figure 5-10 Pin 1 of IC801

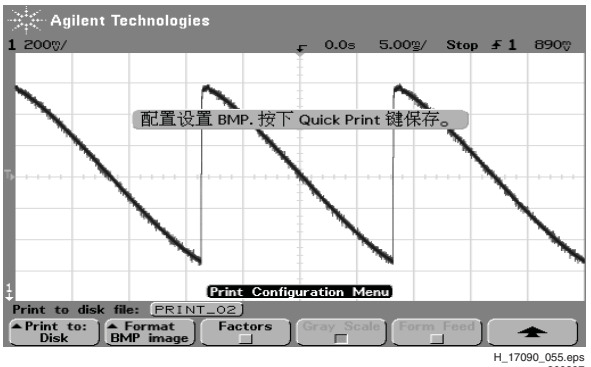


Figure 5-11 V_out pin 23 of IC200

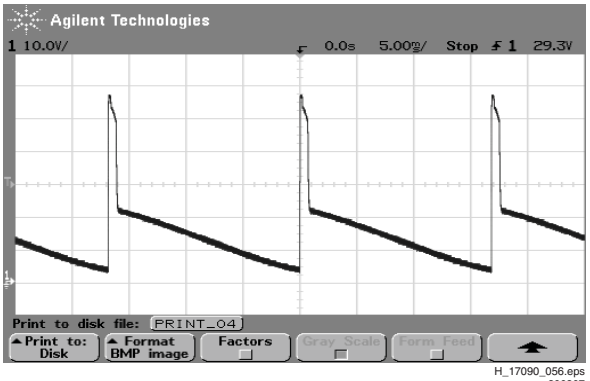


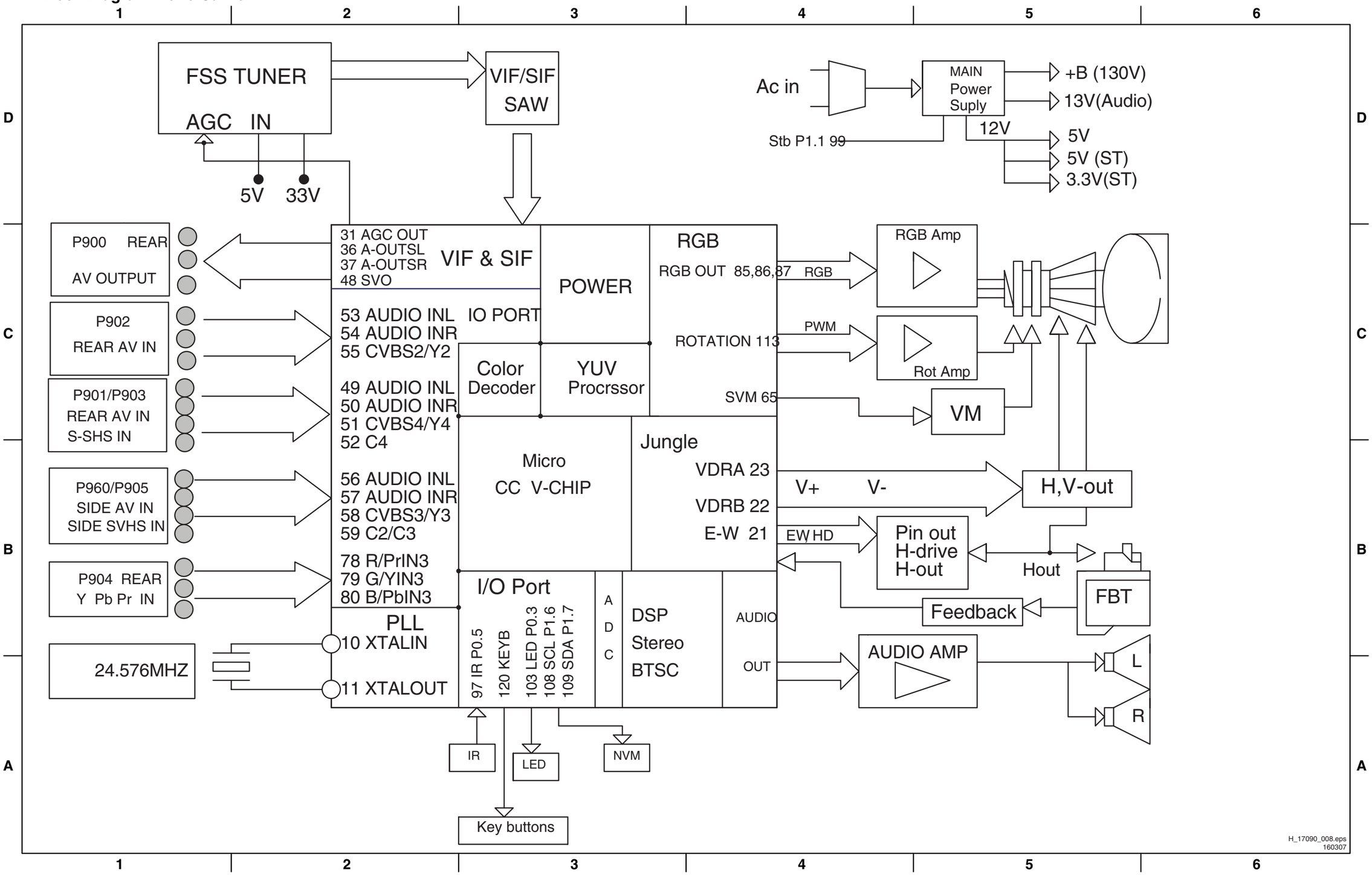
Figure 5-12 V_out pin 5 of IC301

5.3.7 Important Voltages Overview

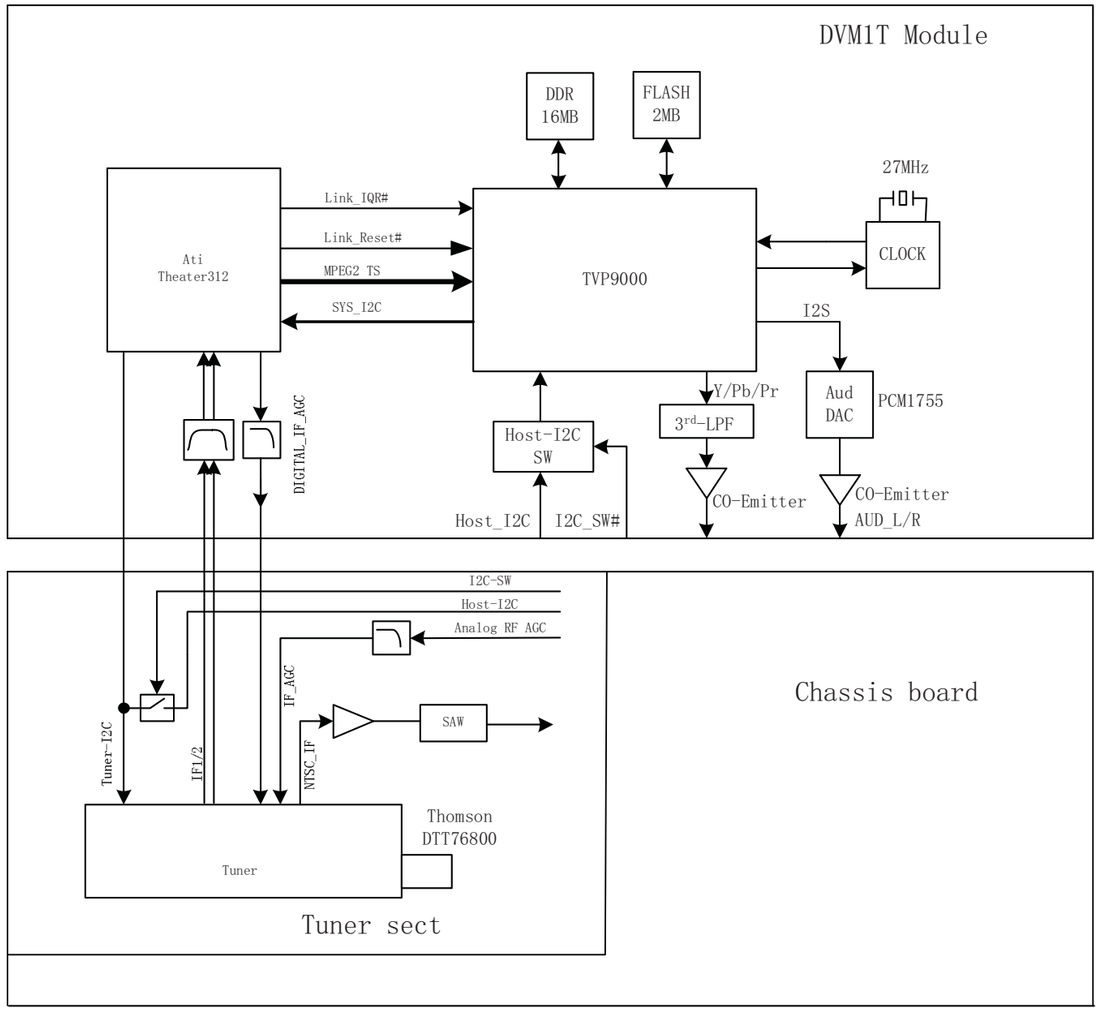
P/N	Position	Normal (V)	Standby (V)
1	B+ Joint of L801 and R826A	130.9	9.3
2	Joint of C834 and D831	12.8	0.8
3	Joint of L212 and C090	5	1.2
4	Pin99 of IC200	3.6	0.1
5	Joint of D281 and R284	24.5	0

6. Block Diagrams, Test Point Overview, and Waveforms

Block Diagram Mono Carrier



Block Diagram ATSC Module



Figuer 1 DVM1T module System Diagram

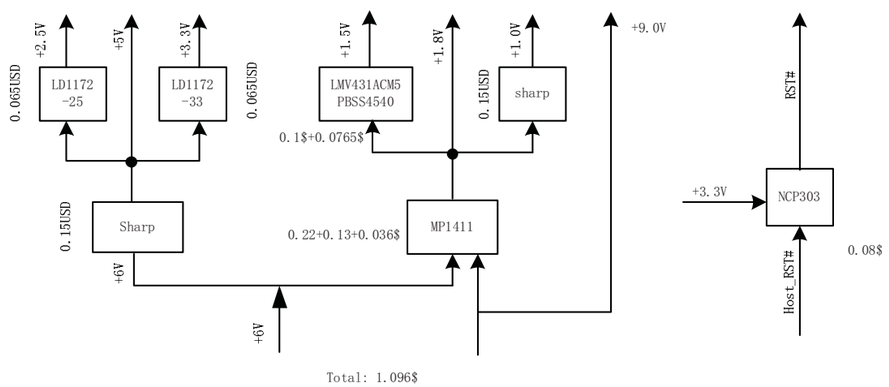


Figure 2 DVM1T module Power Supply Diagram

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Personal Notes:

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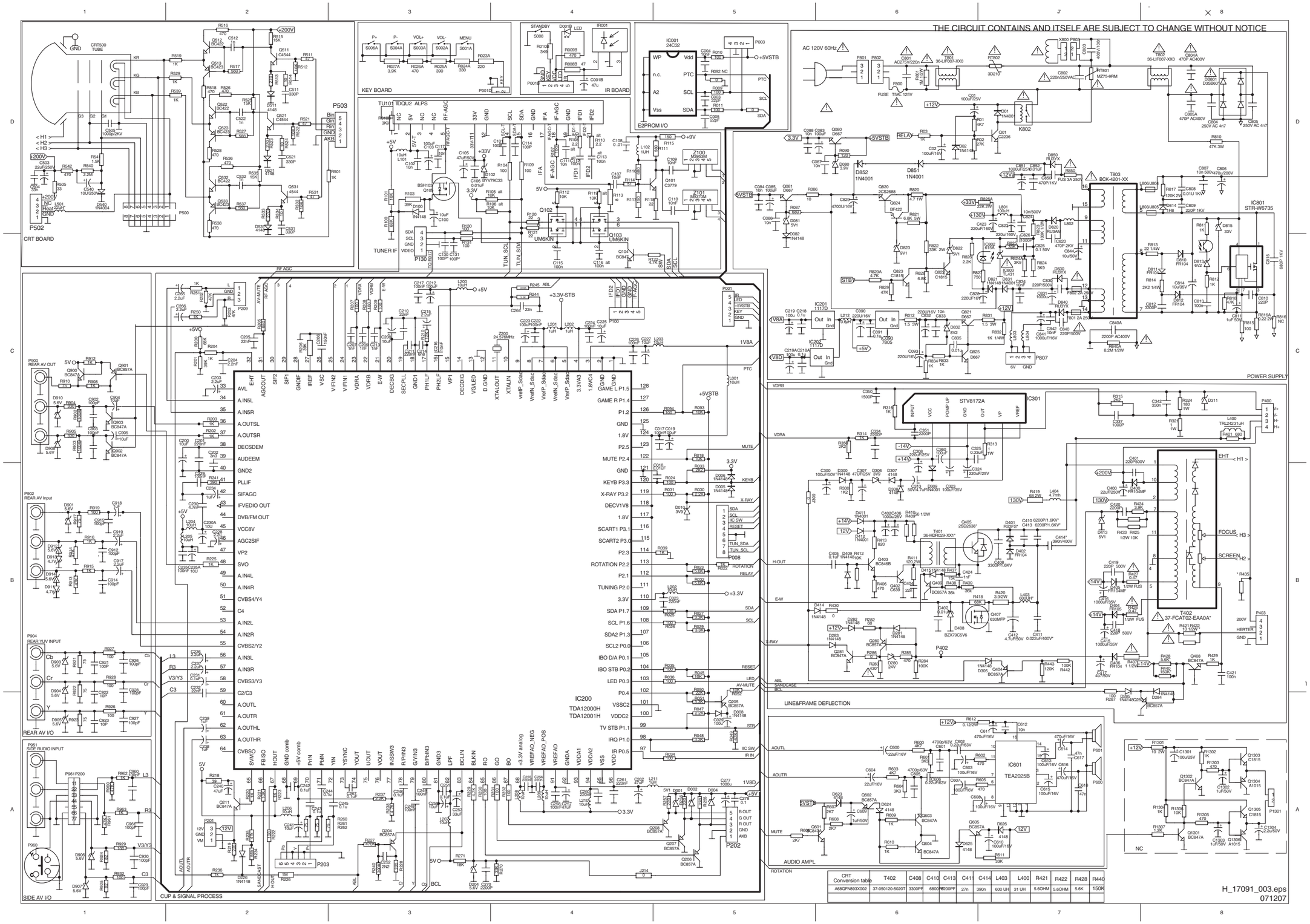
131004

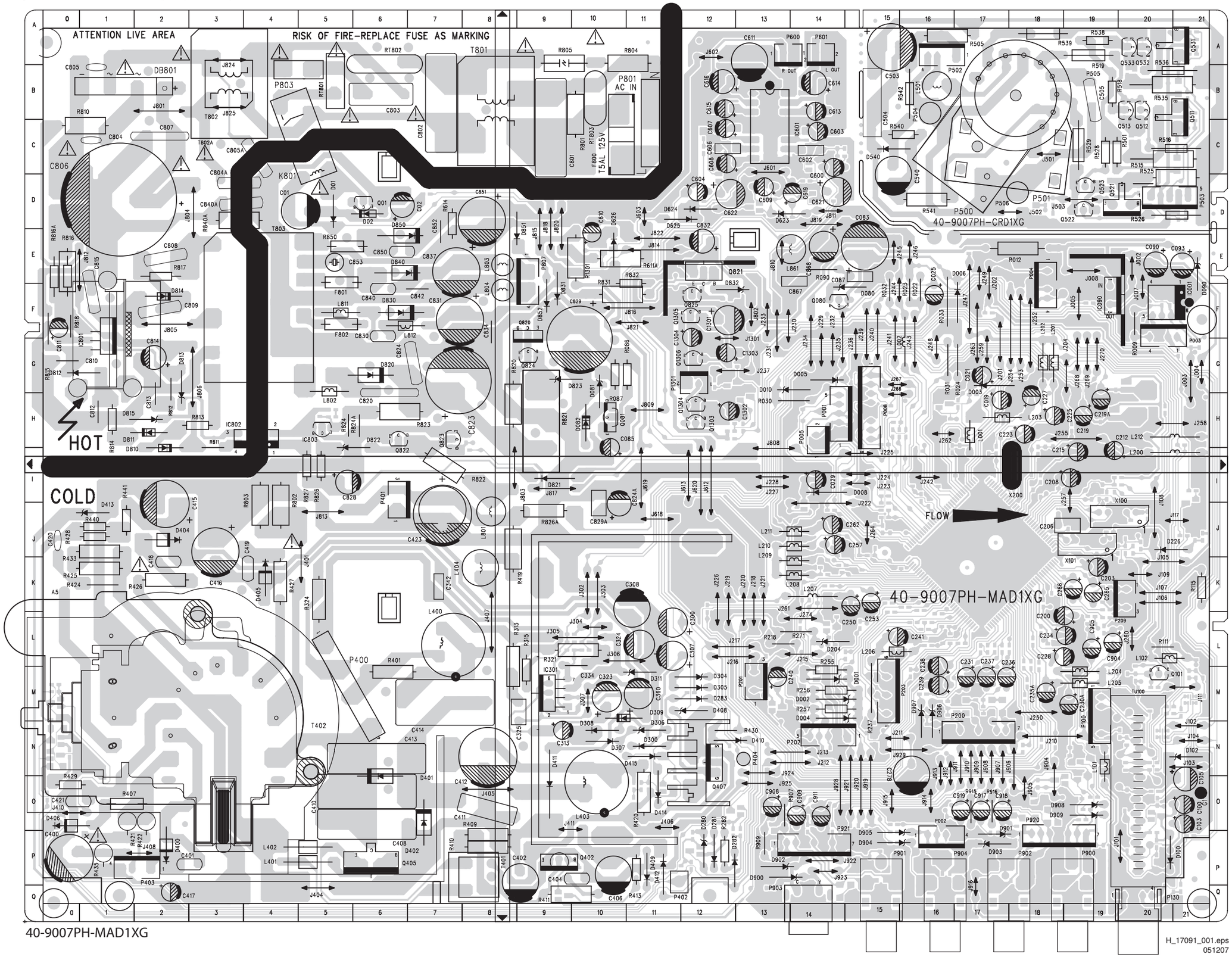
7. Circuit Diagrams and PWB Layouts

Mono Carrier



CRT Conversion table	T402	C408	C410	C413	C411	C414	L403	L400	R421	R422	R428	R440
A68QFN893X002	37-050120-5020T	3300PF	6800PF	2200PF	27n	390n	600 UH	31 UH	5.6OHM	5.6OHM	5.6K	150K

Layout Mono Carrier (Top Side)



40-9007PH-MAD1XG

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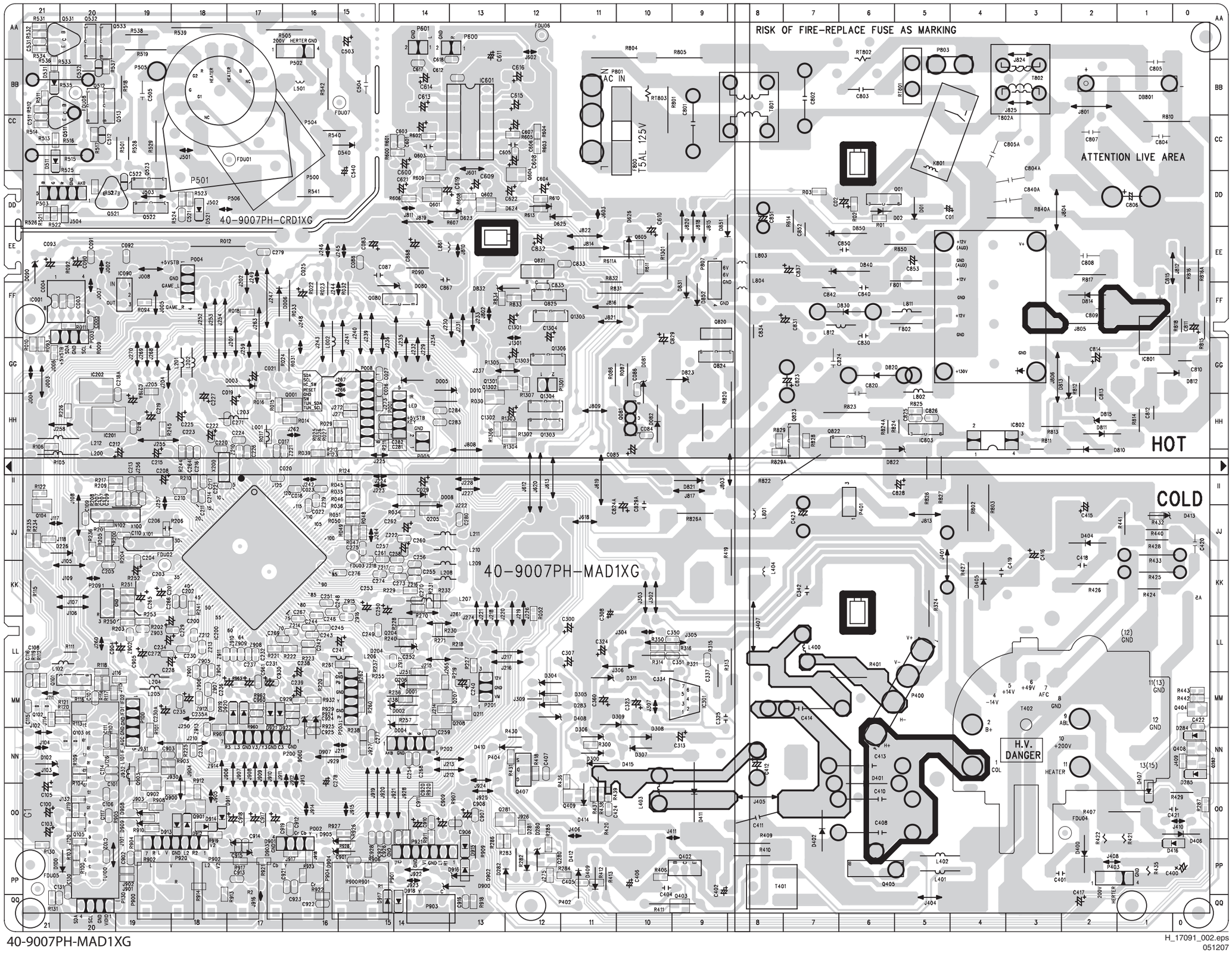
051207

Layout Mono Carrier (Bottom Side)



40-9007PH-MAD1XG

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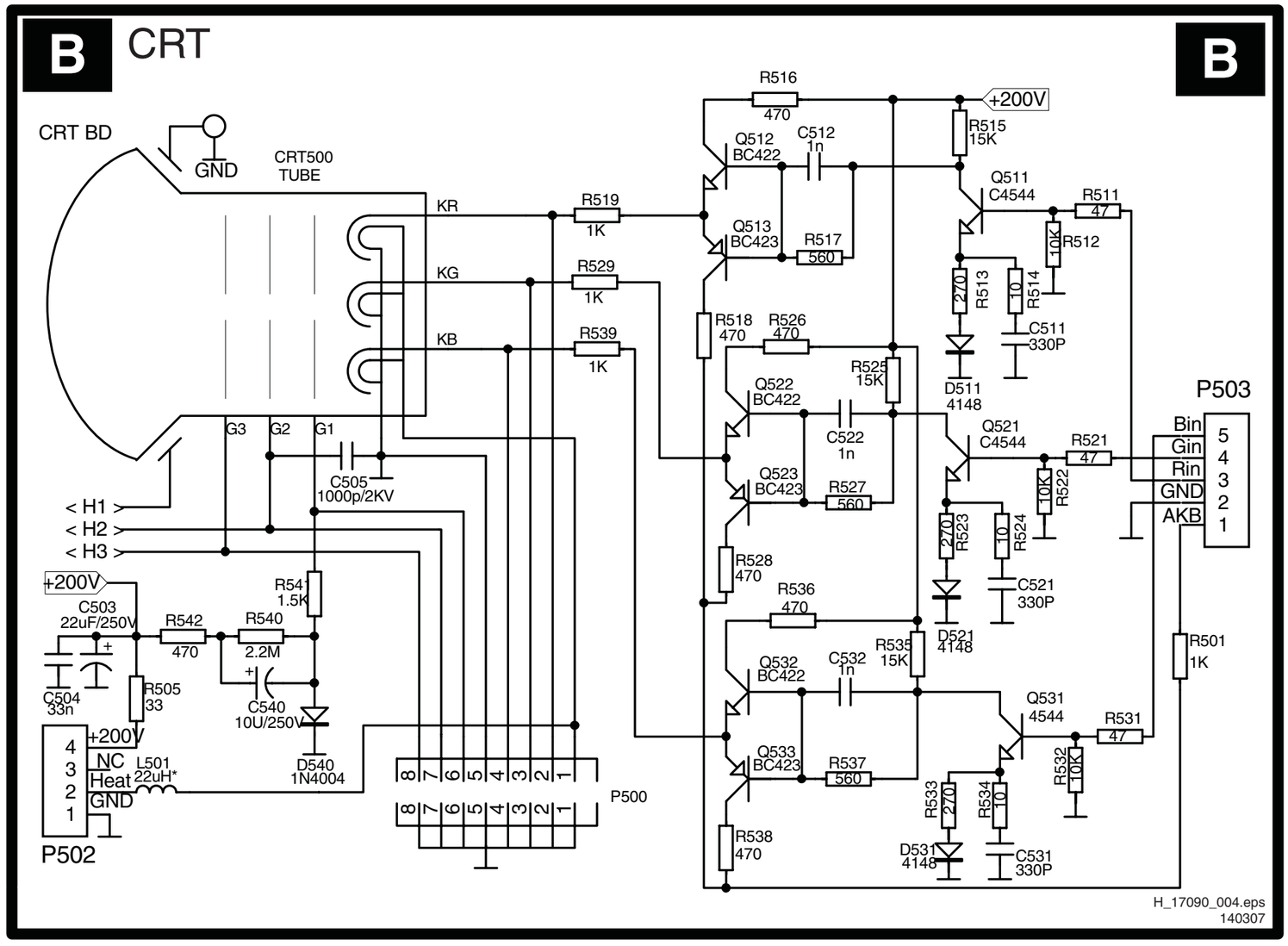
051207

CRT Panel


B
CRT
B
CRT BD
GND
CRT500
TUBE
KR
KG
KB
G3
G2
G1
< H1 >
< H2 >
< H3 >
C505
1000p/2KV
R519
1K
R529
1K
R539
1K
R516
470
+200V
Q512
BC422
C512
1n
R515
15K
Q511
C4544
R511
47
R512
10K
Q513
BC423
R517
560
270
R513
10
R514
C511
330P
R518
470
R526
470
D511
4148
R525
15K
Q522
BC422
C522
1n
Q523
BC423
R527
560
Q521
C4544
R521
47
10K
R522
270
R523
10
R524
C521
330P
D521
4148
R528
470
R536
470
R535
15K
Q532
BC422
C532
1n
Q533
BC423
R537
560
Q531
4544
R531
47
R532
10K
R533
270
R534
10
C531
330P
D531
4148
R538
470
P503
Bin
Gin
Rin
GND
AKB
5
4
3
2
1
R501
1K
P500
8 7 6 5 4 3 2 1
8 7 6 5 4 3 2 1
+200V
C503
22uF/250V
R542
470
R540
2.2M
R541
1.5K
C504
33n
R505
33
C540
10U/250V
D540
1N4004
4
3
2
1
+200V
NC
Heat
GND
L501
22uH*
P502
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ATSC: Power Reset

C1 POWER RESET

C1

V0.4 to V0.5 updated note

1 Added RP107 27K 1%
2 Changed RP105 to 15K 1%
3 Changed RP106 22K 1%
4 Changed Cp128 to 100N
5 Changed CP107 to 1000UF

If RP114 and DP104 are used: RP102 510ohm, RP127 2K, RP105 8.2K, RP106 10K.

Reset# pull up on +5V on Chassis Board

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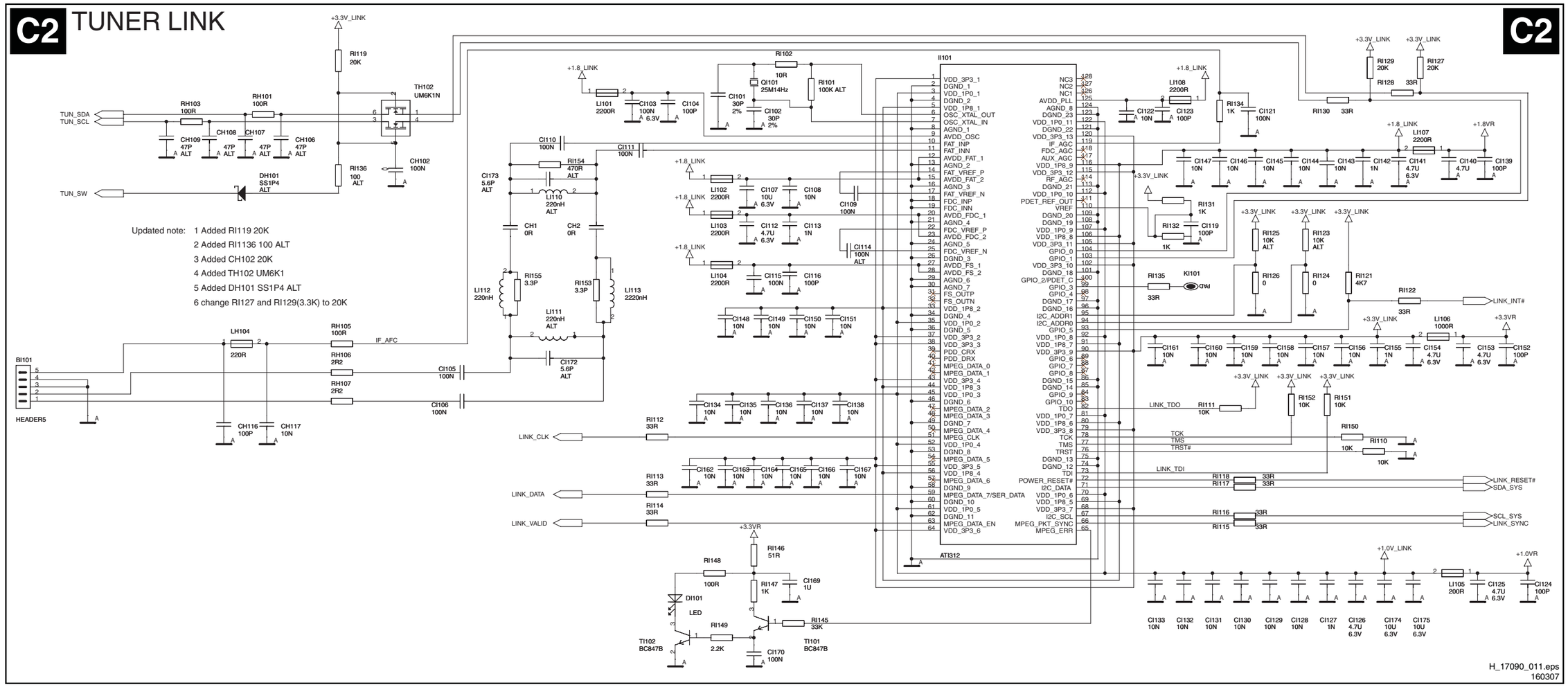
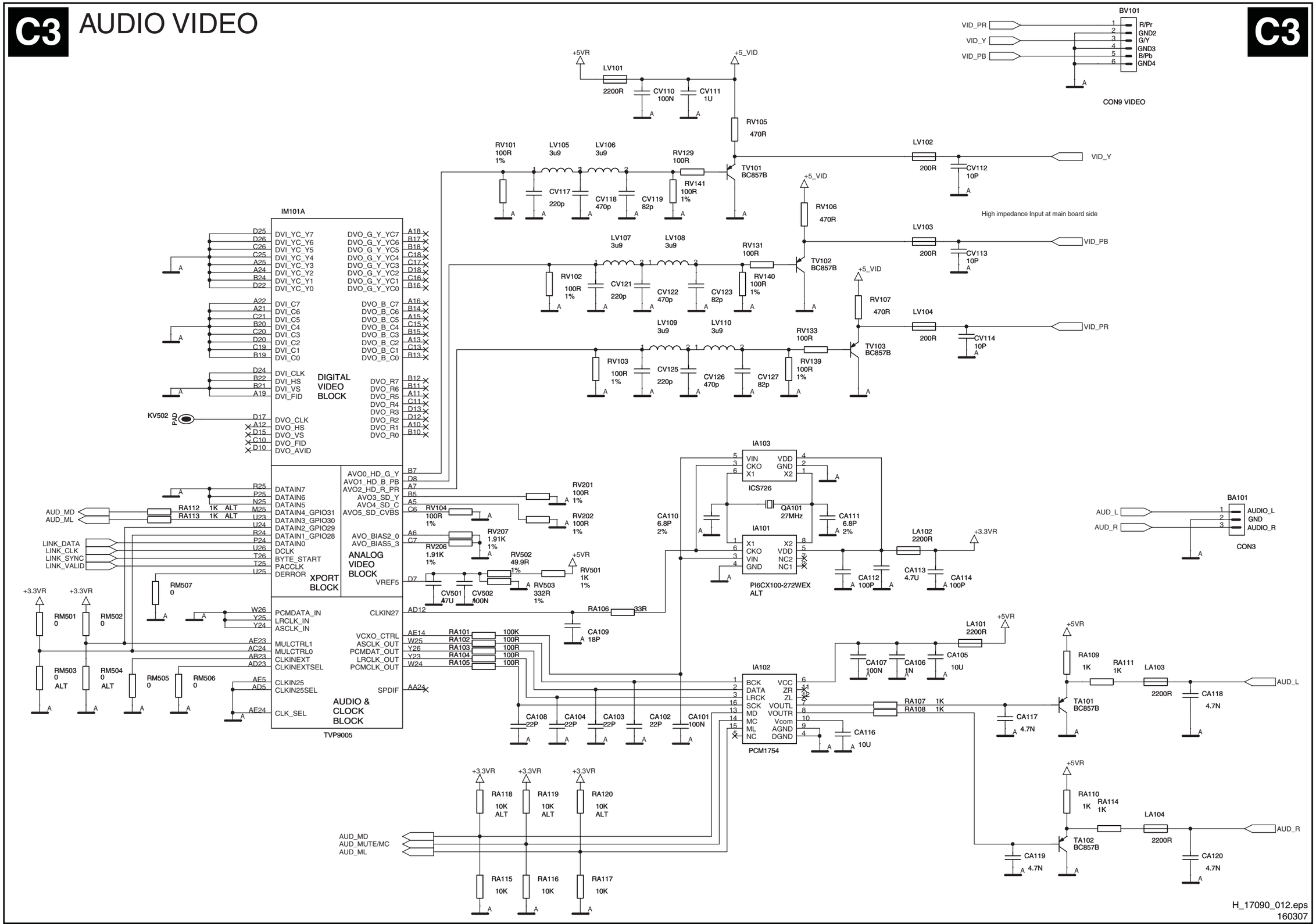
ATSC: Tuner Link

C2 TUNER LINK



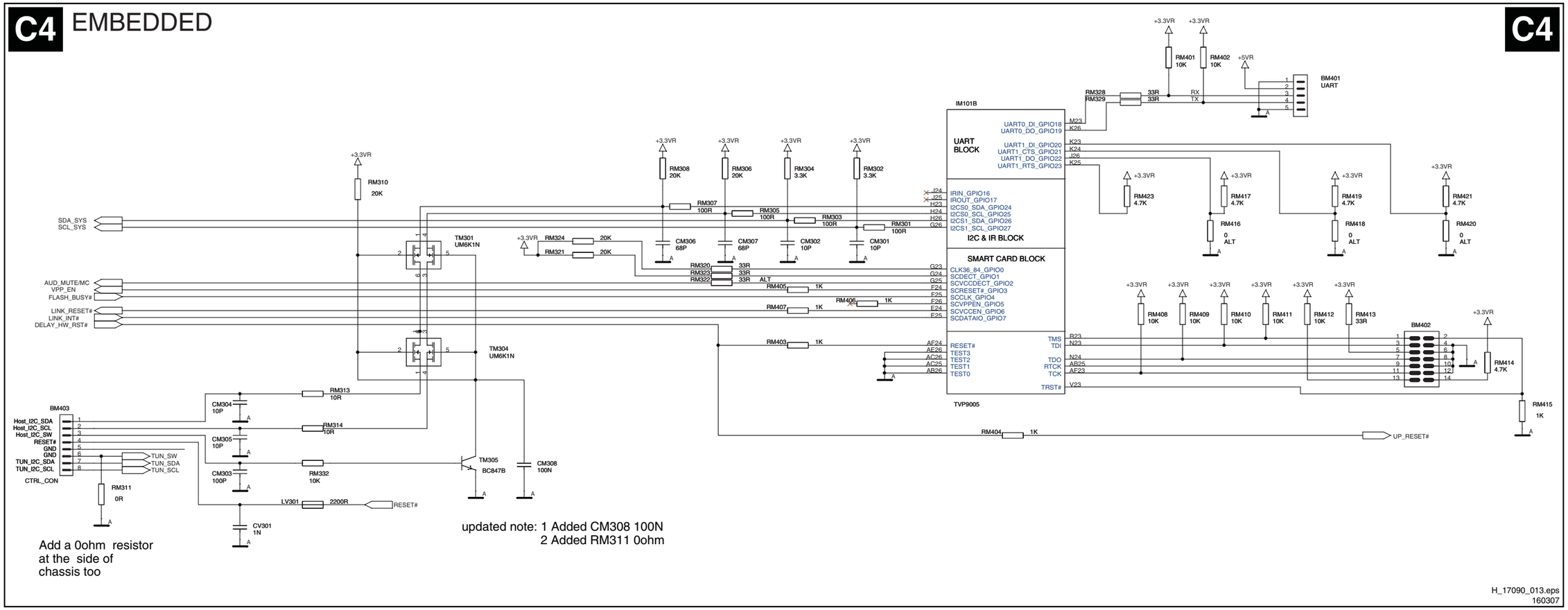
ATSC: Audio Video

C3 AUDIO VIDEO



ATSC: Embedded

C4 EMBEDDED



Add a 0ohm resistor at the side of chassis too

updated note: 1 Added CM308 100N
2 Added RM311 0ohm

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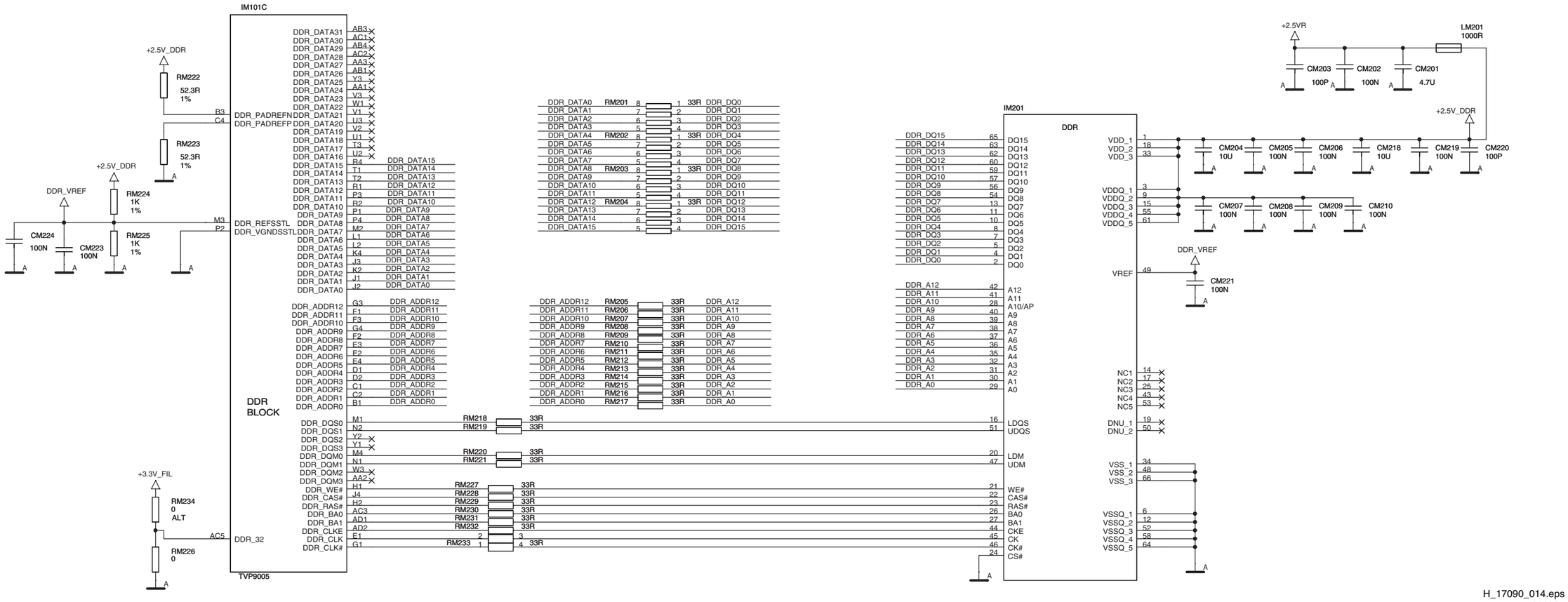
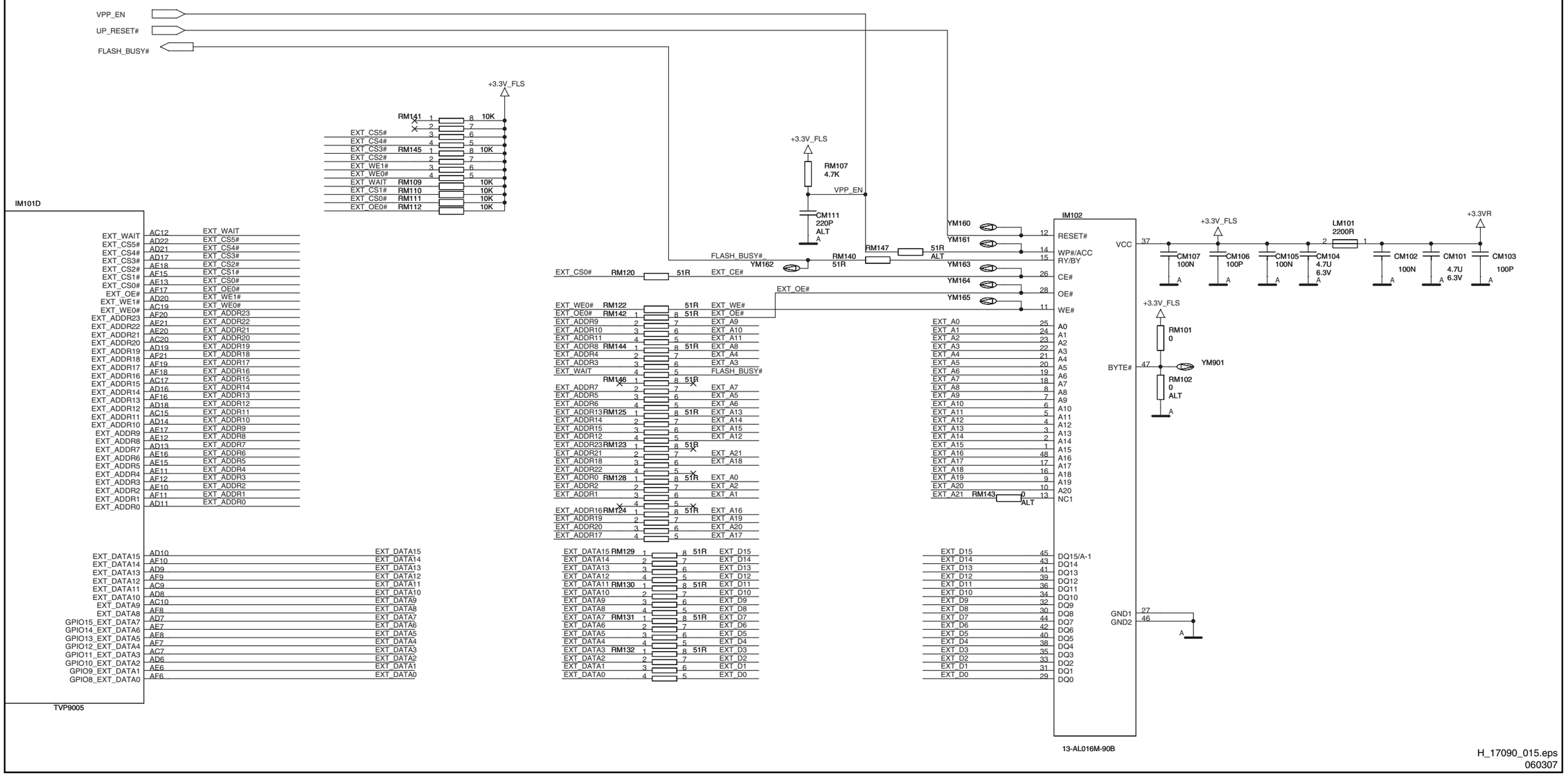
ATSC: DDR Memory

C5 DDR MEMORY



ATSC: Flash Memory

C6 FLASH MEMORY



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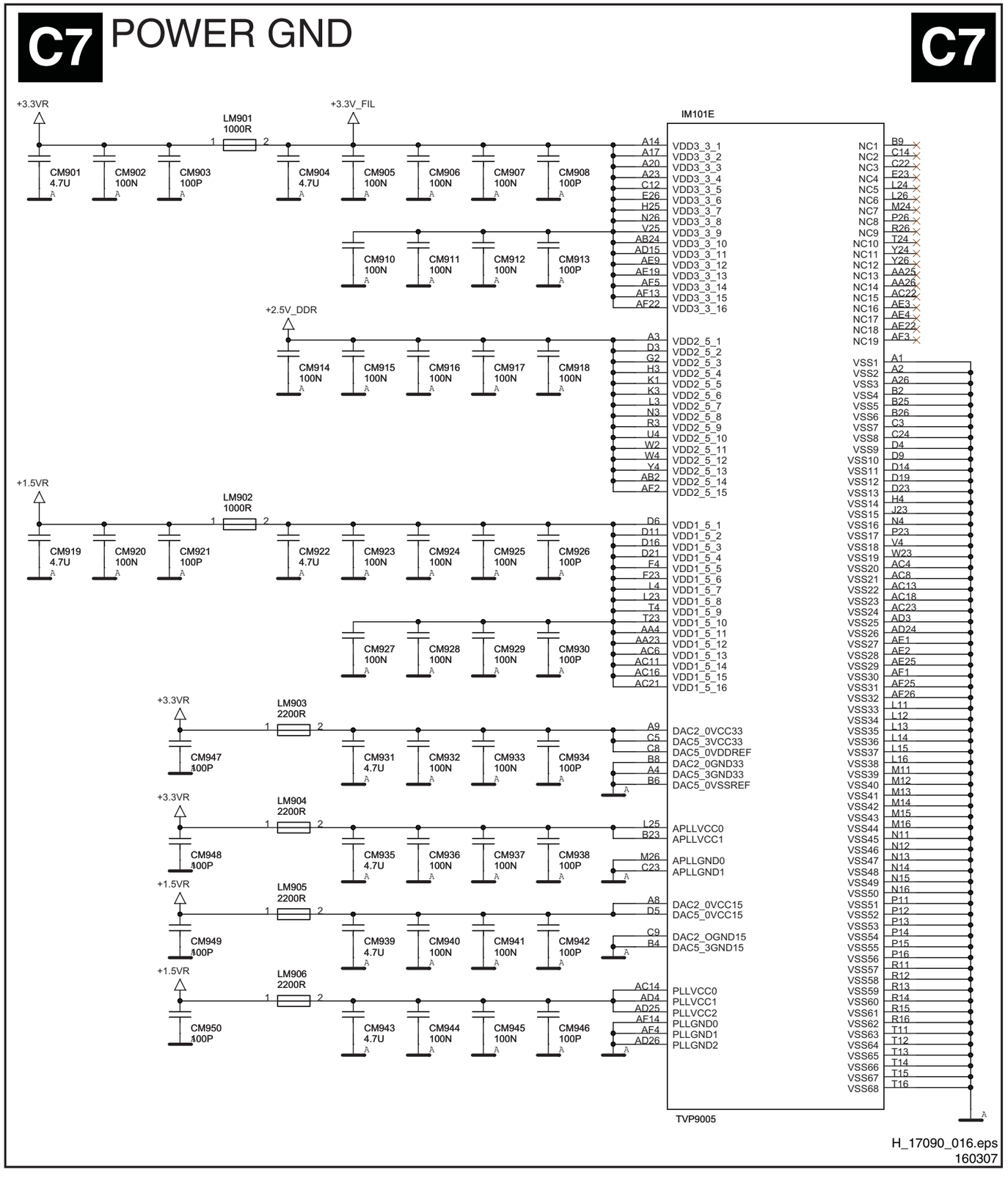
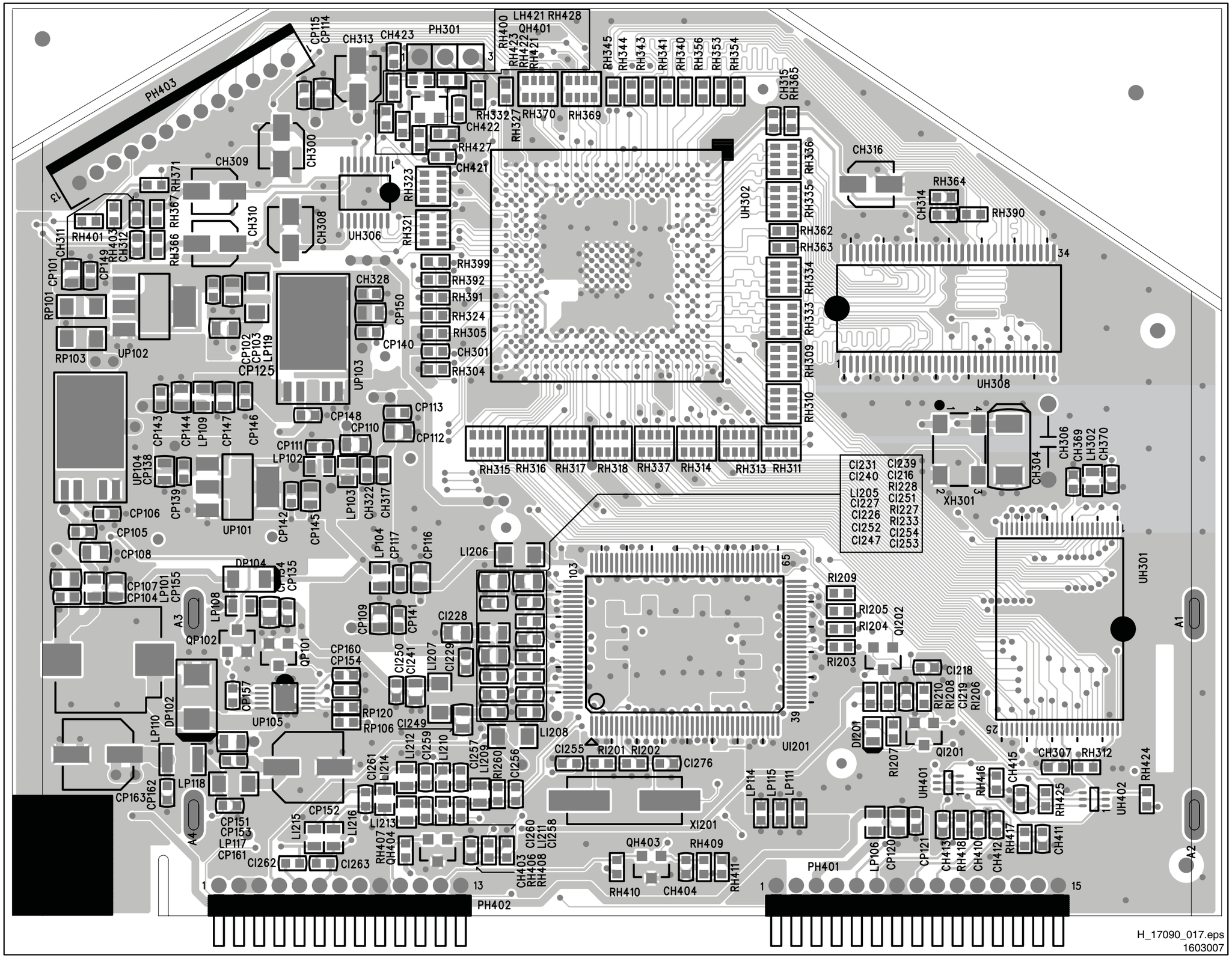
060307

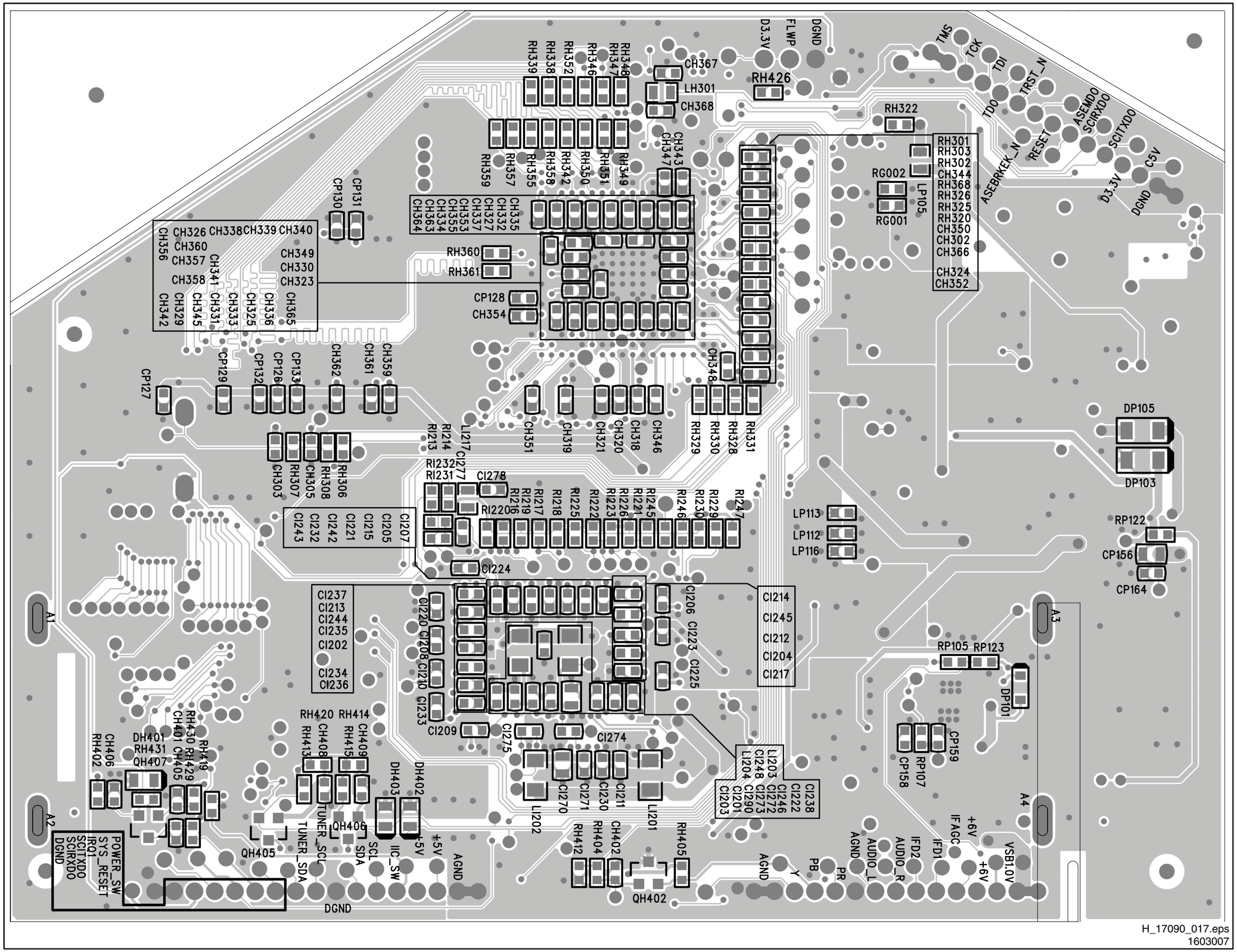
ATSC: Power GND



Layout ATSC Panel (Top Side)



Layout ATSC Panel (Bottom Side)



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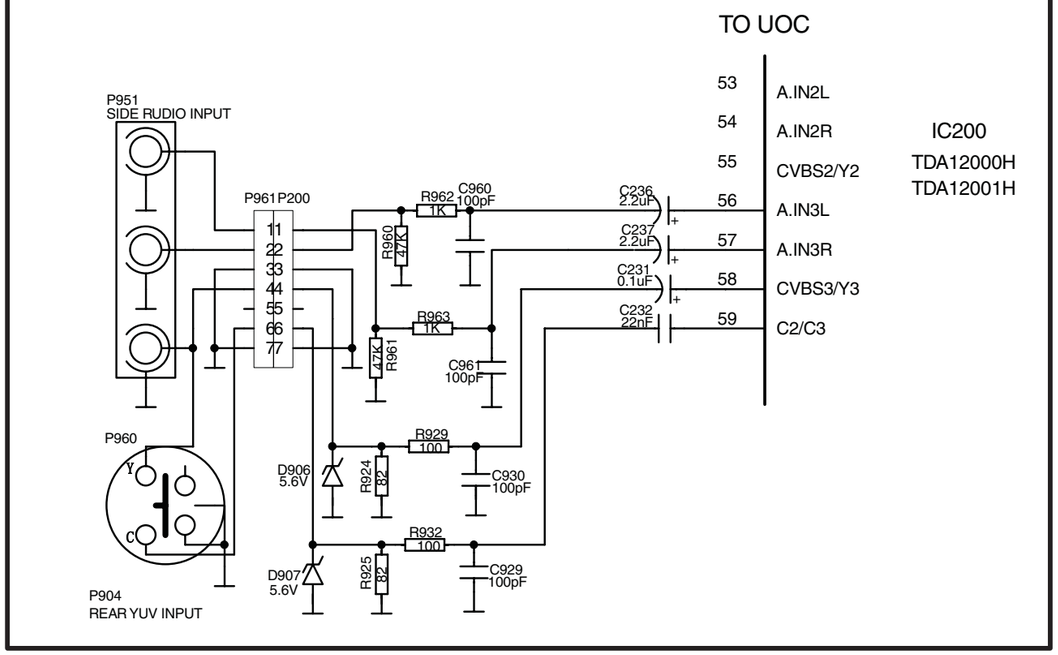
1603007

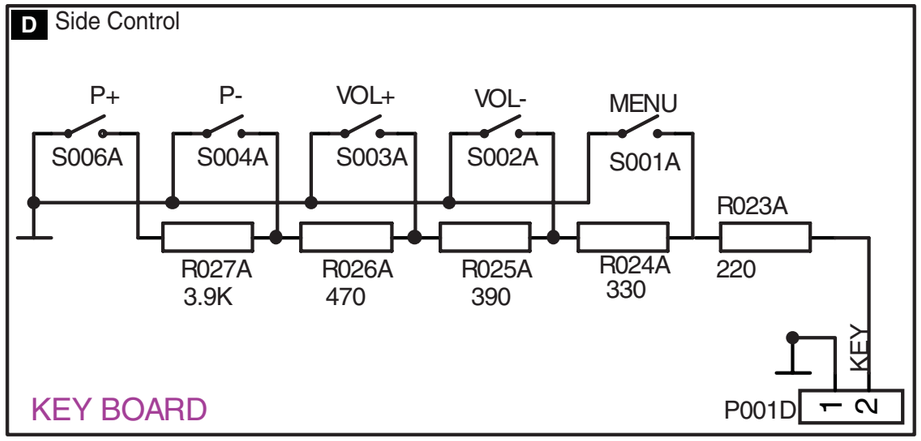
Side AV & Control Panel

D SIDE AV I/O + CONTROL PANEL D

D SIDE AV I/O



D Side Control



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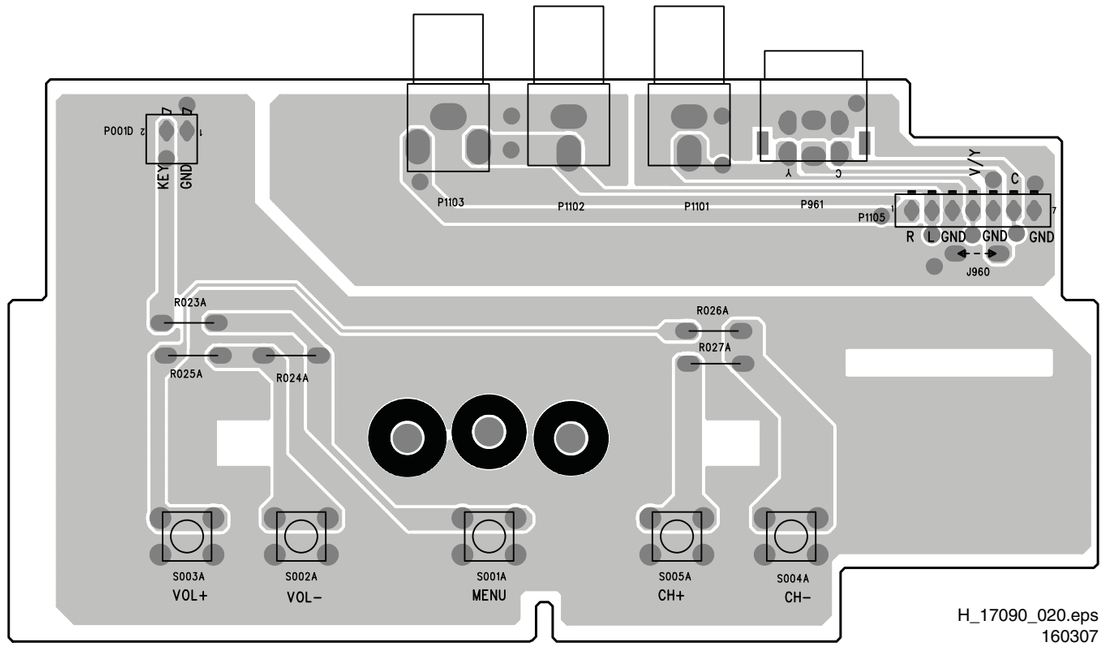
Layout Side AV & Control Panel



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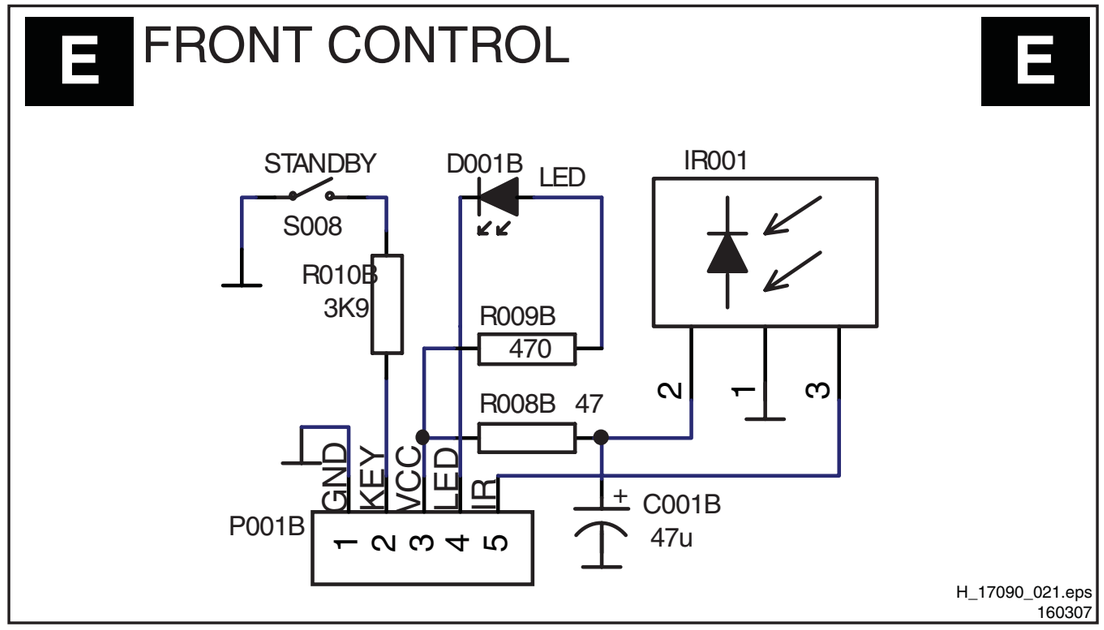
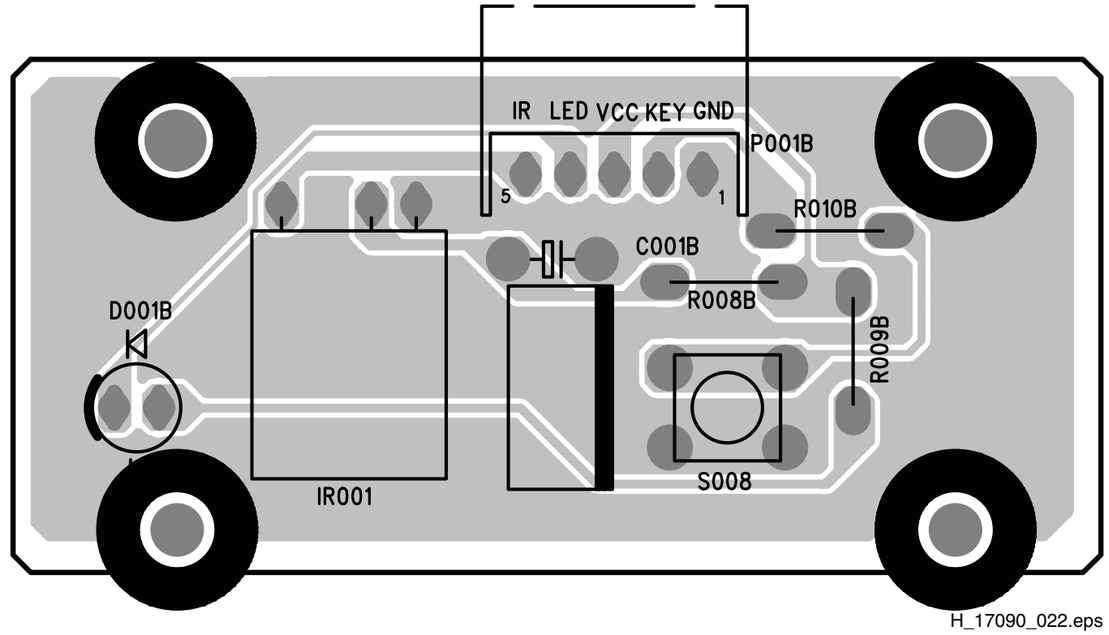
Front Control Panel



Layout Control Panel



Personal Notes:

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131004

8. Alignments

Index of this chapter:

Note: Figures below can deviate slightly from the actual situation, due to the different set executions.

8.1 General Information

Perform all electrical adjustments under the following conditions:

- Power supply voltage: 120 V_{AC} / 60 Hz (± 10%)
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 15 minutes.
- Measure voltages and waveforms in relation to correct ground (e.g. measure audio signals in relation to AUDIO_GND).
  Caution: It is not allowed to use heatsinks as ground.
- Test probe: Ri > 10 Mohm, Ci < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

8.2 Factory Mode (Service Menu, Service Mode)

For certain alignment procedures, you will need to enter Factory Mode (Service Menu). **See also figure on next page.**

Note: All system data in Factory Mode of “Key 8” and “Key 9” are not adjustable when servicing, otherwise, the set will work abnormally.

8.2.1 How To Enter

1. Press and hold the VOLUME DOWN key tightly on the TV until minimum level.
2. Then, while holding the VOLUME DOWN key, press the “0” key three times on the remote control (RC).

8.2.2 How To Navigate

- Press “UP (^) / DOWN (v)” cursor key on the RC to select option.
- Press “LEFT (<) / RIGHT (>)” cursor key on the RC to adjust or select option.
- Press “0-9”, “CC”, “SLEEP”, “CLEAR”, “MUTE” or “PICTURE” on the RC as the shortcut key to access factory menu. All changes in factory data will be saved in EEPROM automatically.

A few special modes:

- **Vertical Stop mode** is used to confirm the screen voltage. Press “GO BACK” key in factory mode and repress “GO BACK” key to exit.
- **White Balance Alignment mode**: Press “OK” key on the factory RC to cut off the I2C control from the CPU to other ICs. This is only valid during automatic adjustment of the white balance.
- **Initialization of the EEPROM**: In Factory Mode, press the “CLEAR” button. After the screen display “ROM INIT”, press the “>” button to initialize the EEPROM. When the screen displays “ROM INIT OK”, the initialization is completed.
- **Factory Mode Initialization of the EEPROM**: In Factory Mode, press the “MUTE” button to initialize the “Factory-Out” status:
  – V-CHIP: “Off”.
  – Picture presets: “Sports”.
  – Sound presets: “Theatre”.
  – Volume: “30”.
  – Source type: “Cable”.
  – CC select: “CC1”.
  – CC Display: “Off”.
  – Video mode: “DTV”.
  – Language: “English”.
  – Format: “Normal 4:3”.
  – Time zone: “Eastern”.
  – Off Time: “Off”.
  – On Time: “Off”.
  – AVL: “Off”.
  – Virgin Mode: “On”.

8.2.3 How To Exit

Press the “Ana/Dig” button to exit the Factory Mode.

8.2.4 Factory Mode Overview

Enter factory mode:
1. Set volume to "0" with local volume key and Hold
2. Press "0" three times on RC while depressing the volume key.
3. Select number pad on the RC from "0" to "9" to navigate to different menu
4. Within the selected menu, use the navigation key "▲" "▼" on the RC to navigate to different parameters.
5. Within the selected parameter, use the navidation key "◄" "►" on RC to change the value of the parameter.
6. To leave factory mode, select "Antenna" key on the RC/power down the set with the main switch.

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Figure 8-1 Factory Mode Overview

8.3 Alignment procedure

8.3.1 B+ Voltage Test

1. Apply 108 - 132 V_{AC} to the mains power input, and apply a standard test pattern to the RF input.
2. Not need to adjust, just for verification: with the TV settings in “Personal” mode (BRI/CONT/COL in middle position), test if the voltage at C823 (B+) is 130 V ± 2.0 V.

8.3.2 RF AGC Adjustment

1. Input RF signal: 187.25 MHz (ch9), 60 dB Grey Scale signal, 100% modulation.
2. Press key “4” to enter the RF AGC adjustment mode.
3. Press the “NFO” key on the RC for auto adjusting the RF AGC value. **Note:** you also can adjust the “RF AGC” item until the OSD changes from “INACTIVE” to ”ACTIVE”.
4. Input 60 dB grey scale signal, and confirm there is snow on the screen. Then input 100 dB grey scale signal and check if the picture is OK.

8.3.3 Screen And Focus Voltage Adjustment

Screen voltage adjustment

1. Before adjusting, please confirm that the settings are:
   – Input signal: Cross Hatch test pattern
   – BRI/CONT/TINT/COLOR in the middle.
   – COLOR TEMP= NORMAL.
   – PICTURE ENHANCE= OFF.
2. Press the “GO BACK” key on the RC and the screen will become a horizontal line (vertical stop mode).
3. Then adjust the “Screen” potentiometer on the LOT (lower one), until the horizontal line is just visible.
4. At this moment (vertical off), measure the VG2 voltage with a high voltage meter and high voltage test probe (1000:1). The VG2 voltage spec is 700 V ± 100 V.

Note: Before adjusting VG2, please confirm that RED= 32, GRN= 32, WPR= 40, WPG= 40, and WPB= 40.

Focus voltage adjustment

1. Adjust the “Focus” potentiometer on the LOT (upper one) such that the horizontal/vertical line of 2/3 on the screen looks thinnest.

8.3.4 White Balance Adjustment

1. Before adjusting, please confirm that the settings are:
   – BRI/CONT/TINT/COLOR in the middle.
   – COLOR TEMP= NORMAL.
   – PICTURE ENHANCE= OFF.
2. Press the “1” key on the RC to enter the White Balance adjustment.
3. Choose a White Pattern of 27 IRE (192.8 mV), measure the picture with a color analyzer, and adjust RED and GRN.
4. Choose a White Pattern of 67 IRE (478.57 mV), measure the picture with a color analyzer, and adjust WPR, WPG and WPB.
5. Repeat these steps until you get the right color on both dark and bright pictures (see next table).

If you do not have a color analyzer, please use the default values as given in figure “Factory mode overview”.

Table 8-1 White balance alignment values

Picture Mode	Color Temp.	UV	Y (Nit)
Normal	9300K	0	90
Cool	12000K	0	90
Warm	6500K	0	90

Note: Only adjust the NORMAL status; the COOL/WARM settings are default.

Remarks:
- When you enter Factory Mode ”1”, the “BRI/CONT/TINT/COLOR” auto sets to mid value, PICTURE ENHANCE sets to OFF, and COLOR TEMP sets to NORMAL.
- When adjusting, RED and GRN are used to adjust black balance, and WPR, WPB, WPG are used to adjust white balance.

8.3.5 Adjustment Of Sub-Brightness

Input signal: Grey Bar test pattern.
1. Press key “6” in Factory Mode to enter Sub-Brightness Adjustment.
2. At standard state, adjust “BRTC” parameter until the last two grey bars are just visible (do **not** change value “BRTS”).

8.3.6 Picture geometric adjustment

Vertical geometric adjustment

1. Input a NTSC cross hatch pattern with black and white background signal.
2. Press key “2” on the RC to enter the Vertical Geometric adjustment.
3. Use the RC to adjust one by one, watch the figure until the center or the corner grid has a same size.
4. When adjusting the vertical position, make the center of vertical intermediately.

Table 8-2 Vertical geometry alignment values

Item	Description	Default Value	Remark
VPOS	Vertical position	48	Align if necessary
VAM	Vertical amplitude	21	Align if necessary
VSL	Vertical slope	31	Align if necessary
VL	Vertical linearity	32	Do not align
VSC	Vertical scroll	31	Align if necessary
SCL	Vertical S-correction.	32	Do not align
WBR	Vertical start of blanking time in 4:3 mode (16:9 tube)	7	Do not align
WBF	Vertical end of blanking time in 4:3 mode (16:9 tube)	7	Do not align
BSWBR	Right side black width of blue screen	6	Do not align
BSWBF	Left side black width of blue screen	9	Do not align

Remarks:
- VSL: the second half may blank; adjust the first half at display range.
- WBF/WBR is only used on a matching 16:9 tube. At 4:3 picture mode, adjust blanking time of R and F. First press the “ZOOM” key to switch to 4:3 mode, and then adjust WBF and WBR respectively to make the over scan meet the requirements.
- Adjustment is disabled when match 4:3 tube.
- BSWBR and BSWBF do not need adjustment.

Horizontal geometry adjustment

1. Input a NTSC cross hatch pattern with black and white background signal.
2. Press key “3” on the RC to enter the Horizontal Geometric adjustment.
3. Use the RC to adjust one by one, watch the figure until the center and the vertical line at left and right side of the picture becomes straight.

Figure 8-2 Horizontal geometry alignment values

Item	Description	Default Value	Remark
HSH	Horizontal position	46	Adjust if necessary
PAR	Parallelogram	22	Adjust if necessary
BOW	Bow	34	Adjust if necessary
EWW	Horizontal width	44	Adjust if necessary
EWP	Pin cushion correction	27	Adjust if necessary
UCR	Upper corner correction	44	Adjust if necessary
LCR	Low corner correction	48	Adjust if necessary
EWT	Trapezium correction	31	Adjust if necessary

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

Notes:

Only **new** circuits (circuits that are not published recently) are described.

- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the Wiring, Block (chapter 6) and Circuit Diagrams (chapter 7). Where necessary, you will find a separate drawing for clarification.

9.1 General

This chassis uses the Philips TDA12000H processor/decoder, and has the following key components:

- IC200: TDA12000H/N1F00 MCU and Decoder.
- X100: D9453D SAW Filter.
- X101: F9370 SAW Filter.
- TU100: TDQU2-007A ATSC 2IN1 Tuner.
- IC001: M24C64-WBN6P EEPROM.
- IC601: TEA2025B2X2W Audio output amplifier.
- IC301: STV8172A Vertical Deflection Output IC.
- Q405: 2SD2638 Horizontal Output IC.
- IC801: STR-W6735 Power Controller IC.
- CRT: 29" CRT (50Hz) A68QFN893X004.
- IM101: Digital TV standard decode IC TVP9005 (for digital module).
- II101: ATSC QAM receiver and demodulator (for digital module).
- IM201: 8MX16 DDR EDD1216AATA (for digital module).
- IM102: 16MB FLASH S29AL016D70TFI02 (for digital module).

9.2 Brief IC Descriptions

9.2.1 IC200

The UOCIII series combines the functions of a Video Signal Processor (VSP) together with a FLASH embedded TEXT/ Control/Graphics microcontroller (TCG microcontroller) and US Closed Caption decoder. In addition the following functions are added:

- Adaptive digital (4H/2H) PAL/NTSC comb filter.
- Teletext decoder with 10 page text memory.
- Multi-standard stereo decoder.
- BTSC stereo decoder.
- Digital sound processing circuit.
- Digital video processing circuit.

The UOCIII series consists of the following 3 basic concepts:

- Stereo. These versions contain the TV processor with a stereo audio selector, the TCG microcontroller, the multi-standard stereo or BTSC decoder, the digital sound processing circuit and the digital video processing circuit. Options are the adaptive digital PAL/NTSC comb filter and a teletext decoder with 10 page text memory.
- AV stereo. These versions contain the TV processor with stereo audio selector and the TCG microcontroller. Options are the digital sound processing circuit, the digital video processing circuit, the adaptive digital PAL/NTSC comb filter and a teletext decoder with a 10 page text memory.
- Mono sound. These versions contain the TV processor with a selector for mono audio signals and the TCG microcontroller. Options are the adaptive digital PAL/NTSC comb filter and a teletext decoder with 10 page text memory.

Block diagram is as follows:

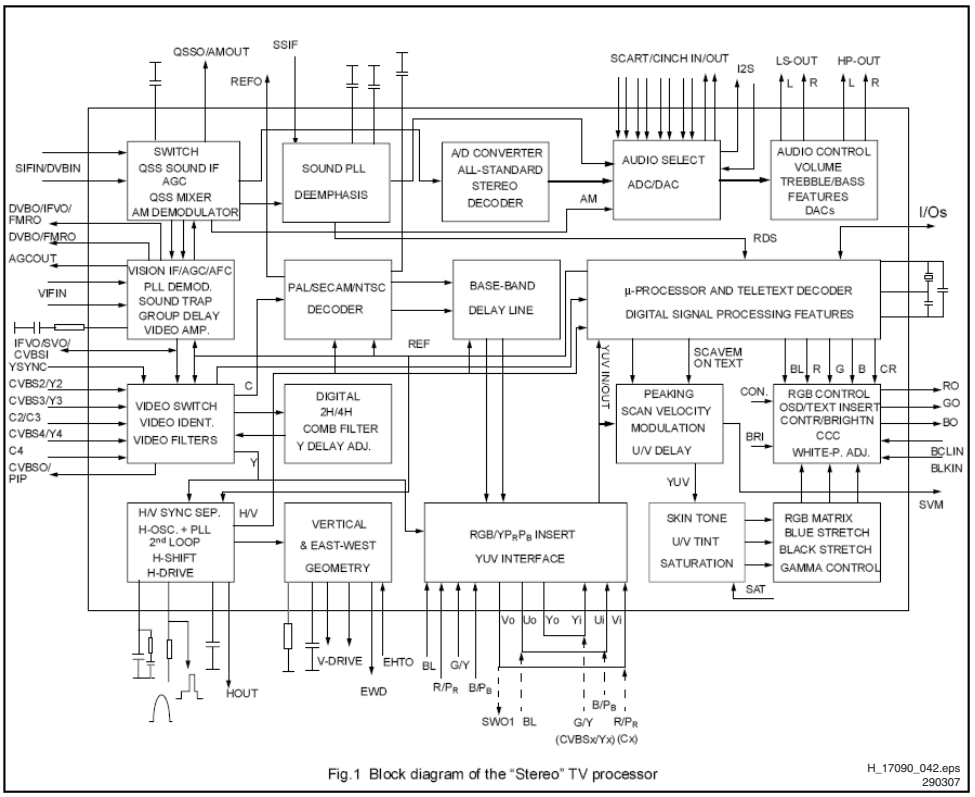
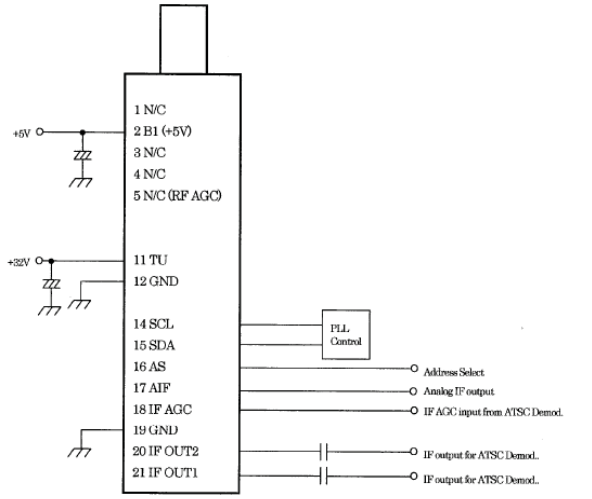


Figure 9-1 Blockdiagram TDA12000H processor/decoder IC200

9.2.2 TU100

Intermediate frequency:
- Picture carrier: 45.75 MHz
- Color carrier: 42.17 MHz
- Sound carrier: 41.25 MHz

Pin connection is as follows:



1	No connection (Leave this terminal open)	14	I2C clock
2	+5.00V +/- 0.25V for LNA and Tuner	15	I2C data
3	No connection (Leave this terminal open)	16	I2C address select terminal
4	No connection (Leave this terminal open)	17	Analog IF output
5	0 to 4V for RF AGC (Leave this terminal open)	18	0V to 3.0V for IF AGC
11	+32V for tuning (without DCDC)	19	GND
12	GND	20	Digital IF signal output 2
		21	Digital IF signal output 1

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Figure 9-2 Blockdiagram Tuner TU100

9.2.3 IC001

The I2C-compatible electrically erasable programmable memory (EEPROM) devices are organized as 8192*8 bit.

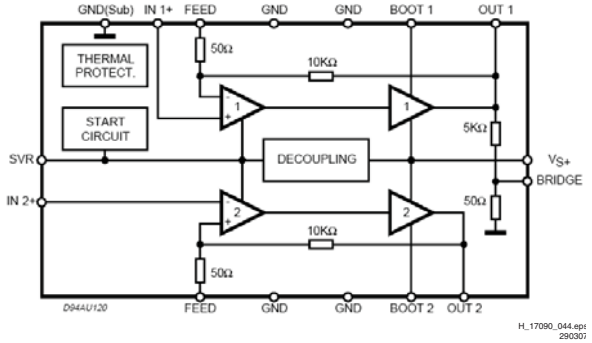

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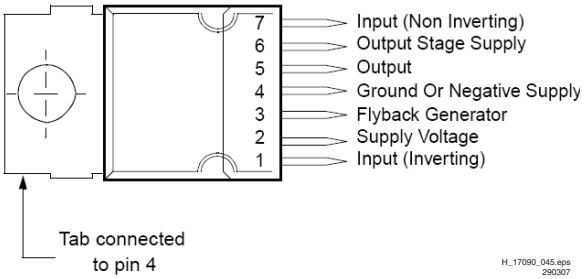
Figure 9-3 Blockdiagram and pinning IC100

9.2.4 IC601

The TEA2025B/D is a monolithic integrated circuit in 12+2+2 Power dip, intended for use as dual or bridge power audio amplifier. Block diagram is as follows:

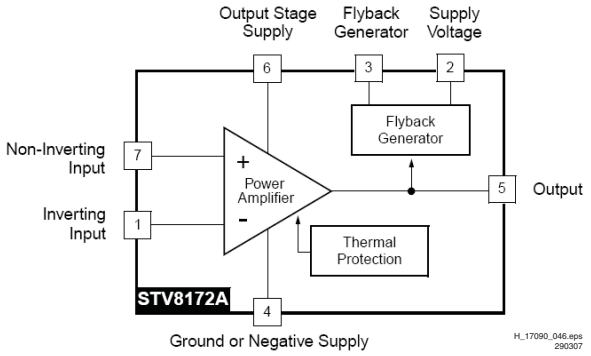


H_17090_045.eps 290307

Figure 9-4 Pinning TEA2025B/D

9.2.5 IC301

The STV8172A is a vertical deflection booster designed for TV and monitor applications. This device, supplied with up to 35 V, provides up to 2.5 A output current to drive the vertical deflection yoke.
The internal fly back generator delivers fly back voltages up to 75 V. In double-supply applications, a stand-by state will be reached by stopping the (+) supply alone.
Pin connection is as follows:

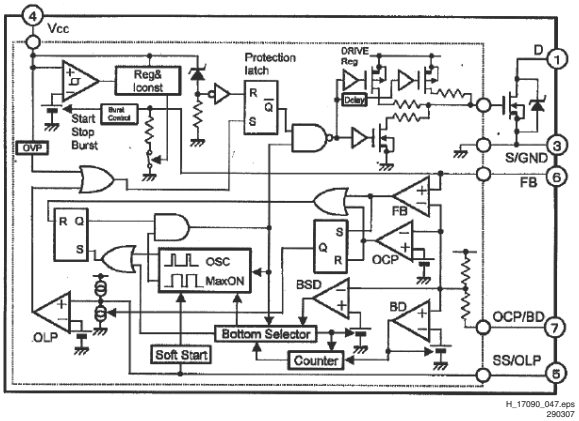


H_17090_046.eps 290307

Figure 9-5 Blockdiagram and pinning STV8172A IC301

9.2.6 IC801

This is a switching regulator. Block diagram is as follows:



H_17090_047.eps 290307

Figure 9-6 Blockdiagram and pinning IC801

9.2.7 IM101

This is a cost-effective ATSC DTV processor targeted for low-cost, high-volume ATSC DTV receivers and converter boxes that convert DTV signals to NTSC/PAL output for viewing on legacy TV receivers.
Block diagram is as follows:

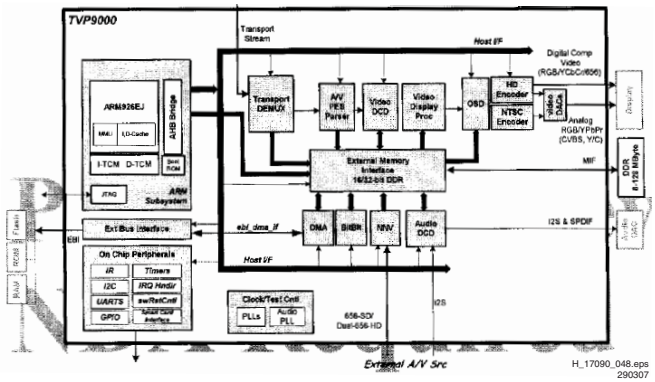


Figure 9-7 Blockdiagram ATSC processor IM101

It is a System on Chip (SoC) device that integrates the main function of a DTV receiver. A Transport Packet Parser (TPP) is integrated that includes POD to Host interface support for Digital Cable. The MP HL MPEG-2 Video Decoder is capable of fully decoding all ATSC DTV video formats.
A Display Processor is included with the ability to convert any ATSC DTV format to any other format, including non-standard display resolutions support for panel based DTVs.
Multi-Format Audio decode and processing is supported with the Audio Processor.
The On Screen Display (OSD) controller and 2D Graphics Accelerator can support applications with sophisticated Graphic User Interface.
An ARM926 CPU is included, which controls the memory mapped internal devices and runs the application software.

9.2.8 II101

It offers a high level of integration that greatly simplifies unidirectional digital cable ready receiver design. For the main digital channel (Forward Application Transport - FAT), the THEATER 314 integrates the QAM demodulator and FEC decoder. In addition, it integrates part of the IF circuitry (one SAW filter and one amplifier) typically required for the interface between the tuner and the digital demodulator.
Block diagram is as follows:

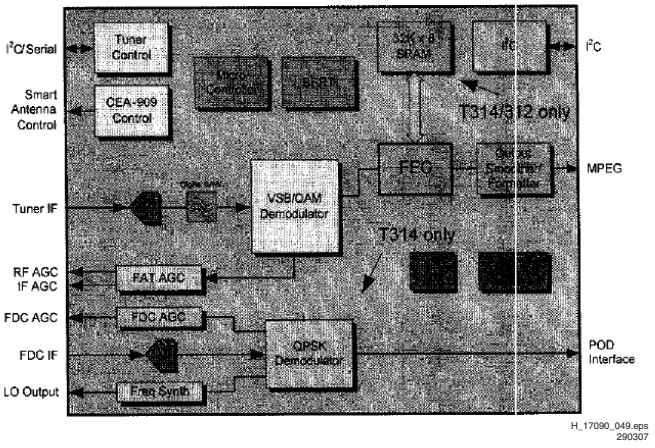


Figure 9-8 Blockdiagram II101

9.2.9 IM201

The EDD1216AATA is a 128 Mbits Double Data Rate (DDR) SDRAM organized as 2,097,154 words 16 bits 4 banks. Read and write operations are performed at the cross points of the CK and the /CK. This high speed data transfer is realized by the 2 bits pre-fetch pipelined architecture.
Data strobe (DQS) both for read and write are available for high speed and reliable data bus design. By setting extended mode register, the on-chip Delay Locked Loop (DLL) can be set enable or disable. It is packaged in 66-pin plastic TSOP (II).

9.2.10 IM102

It is a 16 Mbit, 3.0 Volt-only Flash memory organized as 2,097,152 bytes or 1,048,576 words. The device is offered in 48-ball FBGA, and 48-pin TSOP packages. The word-wide data (x16) appears on DQ15-DQ0; the byte-wide (x8) data appears on DQ7-DQ0. This device is designed to be programmed in-system with the standard system 3.0 volt VCC supply. A 12.0 V VPP or 5.0 VCC are not required for write or erase operations. The device can also be programmed in standard EPROM programmers.
Block diagram is as follows:

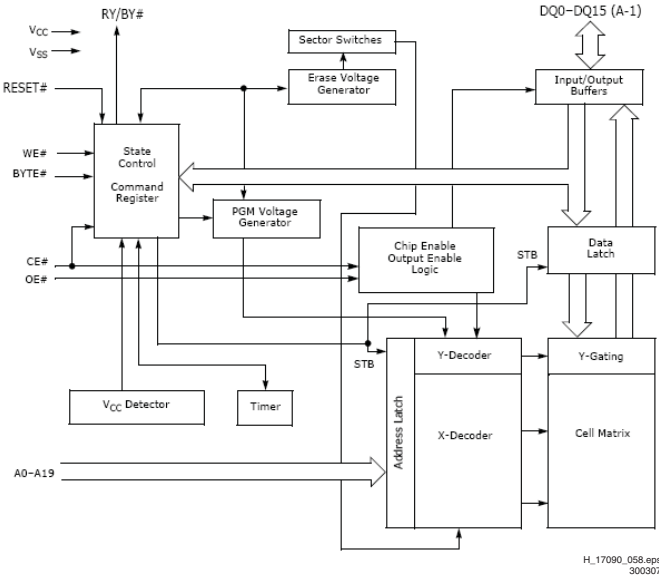


Figure 9-9 Blockdiagram IM102

9.3 Abbreviation List

1080i	1080 visible lines, interlaced
1080p	1080 visible lines, progressive scan
480i	480 visible lines, interlaced
480p	480 visible lines, progressive scan
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeping up the original aspect ratio
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
AR	Aspect Ratio: 4 by 3 or 16 by 9
ATSC	Advanced Television Systems Committee; HDTV standard for the USA, using MPEG2 for video and Dolby Digital for audio
AV	Audio Video
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BTSC	Broadcast Television System Committee
CBA	Circuit Board Assembly (or PWB)
CVBS	Composite Video Blanking and Synchronization
CVI	Component Video Input
DAC	Digital to analogue Converter
DFU	Directions For Use: owner's manual
DNR	Dynamic Noise Reduction
DRAM	Dynamic RAM
DSP	Digital Signal Processing
DVD	Digital Versatile Disc
EEPROM	Electrically Erasable and Programmable Read Only Memory
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FBL	Fast Blanking: DC signal accompanying RGB signals
FM	Field Memory / Frequency Modulation
H	H_sync
HD	High Definition: 720p, 1080i, 1080p
HP	Head Phone
I	Monochrome TV system. Sound carrier distance is 6.0 MHz
I2C	Integrated IC bus
IC	Integrated Circuit
IF	Intermediate Frequency
IR	Infra Red
IRQ	Interrupt ReQuest
Last Status	The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according the customers wishes
LATAM	LATin AMerica
LED	Light Emitting Diode
LS	Loud Speaker
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
MOSFET	Metal Oxide Semiconductor Field Effect Transistor
MPEG	Motion Pictures Experts Group
MUTE	MUTE Line
NAFTA	North American Free Trade Association: Trade agreement between Canada, USA and Mexico
NC	Not Connected
NTSC	National Television Standard Committee. Color system used mainly in North America and Japan. Color carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
NVM	Non Volatile Memory: IC containing TV related data (for example, options)
O/C	Open Circuit
OSD	On Screen Display
PCB	Printed Circuit Board (or PWB)
PIP	Picture In Picture
PLL	Phase Locked Loop. Used, for example, in FST tuning systems. The customer can directly provide the desired frequency
PSU	Power Supply Unit
PWB	Printed Wiring Board (or PCB)
RAM	Random Access Memory
RC	Remote Control transmitter
RC5 (6)	Remote Control system 5 (6), the signal from the remote control receiver
RF	Radio Frequency
RGB	Red, Green, and Blue. The primary color signals for TV. By mixing levels of R, G, and B, all colors (Y/C) are reproduced.
RGBHV	Red, Green, Blue, Horizontal sync, and Vertical sync
ROM	Read Only Memory
SC	SandCastle: two-level pulse derived from sync signals
S/C	Short Circuit
SCL	Clock signal on I2C bus
SD	Standard Definition: 480i, 576i
SDA	Data signal on I2C bus
SDRAM	Synchronous DRAM
SIF	Sound Intermediate Frequency
SMPS	Switch Mode Power Supply
SND	SouND
SOPS	Self Oscillating Power Supply
SRAM	Static RAM
SSB	Small Signal Board
STBY	Stand-by
SVHS	Super Video Home System
SW	Sub Woofer / SoftWare / Switch
THD	Total Harmonic Distortion
TXT	TeleteXT
uP	Microprocessor
VL	Variable Level out: processed audio output toward external amplifier
VCR	Video Cassette Recorder
VGA	Video Graphics Array
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
XTAL	Quartz crystal
YPbPr	Component video (Y= Luminance, Pb/Pr= Color difference signals B-Y and R-Y, other amplitudes w.r.t. to YUV)
Y/C	Video related signals: Y consists of luminance signal, blanking level and sync; C consists of color signal.
Y-OUT	Luminance-signal
YUV	Baseband component video (Y= Luminance, U/V= Color difference signals)

10. Spare Parts List

Set Level

Various

	9965 000 44882	ATSC Module
⚠	9965 000 44591	Deg. Coil XC-JQ3350-91
⚠	9965 000 44654	CRT A68QFN893X004
P400	9965 000 34424	HS 4p 500/13 TJC1-4Y
P600	9965 000 34442	HS 2P22 600/7 TJC3-2Y
SP600	9965 000 36789	Loudsp. 8Ω 5W
SP601	9965 000 36789	Loudsp. 8Ω 5W

Mono Carrier [A]

Various

	9965 000 44733	EMI Suppr. LGK2629
J006	9965 000 27224	0Ω 5% 1/10W 0603
J008	9965 000 13966	Ferr. Bead LB3.5X6
J114	9965 000 27224	0Ω 5% 1/10W 0603
J115	9965 000 27224	0Ω 5% 1/10W 0603
J116	9965 000 27224	0Ω 5% 1/10W 0603
J118	9965 000 27224	0Ω 5% 1/10W 0603
J119	9965 000 27224	0Ω 5% 1/10W 0603
J132	9965 000 27224	0Ω 5% 1/10W 0603
J138	9965 000 27224	0Ω 5% 1/10W 0603
J205	9965 000 27224	0Ω 5% 1/10W 0603
J214	9965 000 27224	0Ω 5% 1/10W 0603
J225	9965 000 14049	100Ω 5% 0.16W
J256	9965 000 27224	0Ω 5% 1/10W 0603
J271	9965 000 27224	0Ω 5% 1/10W 0603
J272	9965 000 27224	0Ω 5% 1/10W 0603
J273	9965 000 27224	0Ω 5% 1/10W 0603
J275	9965 000 27224	0Ω 5% 1/10W 0603
J309	9965 000 27224	0Ω 5% 1/10W 0603
J401	9965 000 15075	1Ω 5% 1W
J408	9965 000 15717	Wire jumper 8mm
J409	9965 000 27224	0Ω 5% 1/10W 0603
J501	9965 000 15717	Wire jumper 8mm
J504	9965 000 17478	0Ω 5% 0.1W
J804	9965 000 13966	Ferr. Bead LB3.5X6
J805	9965 000 13966	Ferr. Bead LB3.5X6
J901	9965 000 27224	0Ω 5% 1/10W 0603
J902	9965 000 27224	0Ω 5% 1/10W 0603
J903	9965 000 27224	0Ω 5% 1/10W 0603
J917	9965 000 27224	0Ω 5% 1/10W 0603
J918	9965 000 27224	0Ω 5% 1/10W 0603
J926	9965 000 27224	0Ω 5% 1/10W 0603
J927	9965 000 27224	0Ω 5% 1/10W 0603
J930	9965 000 27224	0Ω 5% 1/10W 0603
J931	9965 000 27224	0Ω 5% 1/10W 0603
J932	9965 000 27224	0Ω 5% 1/10W 0603
F800	9965 000 15202	Fuse holder
F800	9965 000 44736	Fuse 51S050L
F801	9965 000 44421	Fuse 2A 250V
F802	9965 000 44421	Fuse 2A 250V
K801	9965 000 23783	Relay SS-112DM 12V
N102	9965 000 27224	0Ω 5% 1/10W 0603
P1105	9965 000 44881	Magnetism Ring
P503	9965 000 34463	HS 5p TJC3-5Y
P961	9965 000 22958	Y/C Socket Vertical
TU100	9965 000 44681	Tuner TDQU2-007A
X100	9965 000 44712	SAW FILTER F3953M
X101	9965 000 44713	SAW FILTER F9370
X200	9965 000 32482	Xtal 24.576MHz
Z210	9965 000 27224	0Ω 5% 1/10W 0603
Z212	9965 000 44708	Bead 600Ω 25%
Z213	9965 000 44708	Bead 600Ω 25%
Z214	9965 000 27224	0Ω 5% 1/10W 0603
Z216	9965 000 44708	Bead 600Ω 25%
Z217	9965 000 27224	0Ω 5% 1/10W 0603
Z218	9965 000 44708	Bead 600Ω 25%
Z219	9965 000 44708	Bead 600Ω 25%
Z221	9965 000 44708	Bead 600Ω 25%
Z222	9965 000 27224	0Ω 5% 1/10W 0603
Z901	9965 000 44708	Bead 600Ω 25%
Z902	9965 000 44708	Bead 600Ω 25%
Z903	9965 000 44708	Bead 600Ω 25%
Z908	9965 000 44708	Bead 600Ω 25%
Z909	9965 000 44708	Bead 600Ω 25%
Z910	9965 000 44708	Bead 600Ω 25%
Z911	9965 000 44708	Bead 600Ω 25%
Z912	9965 000 44708	Bead 600Ω 25%
Z913	9965 000 44708	Bead 600Ω 25%
Z914	9965 000 44708	Bead 600Ω 25%
Z915	9965 000 44708	Bead 600Ω 25%
Z916	9965 000 44708	Bead 600Ω 25%
Z917	9965 000 44708	Bead 600Ω 25%

⊣⊢

C003	9965 000 14011	22pF 5% 50V
C004	9965 000 20344	10nF 50V +80-20% 0603
C005	9965 000 14011	22pF 5% 50V
C01	9965 000 44700	330µF 20% 25V
C017	9965 000 14008	0.1uF 50V +80%~-20%
C018	9965 000 20344	10nF 50V +80-20% 0603
C019	9965 000 14069	100µF 20% 16V
C02	9965 000 14069	100µF 20% 16V
C021	9965 000 14069	100µF 20% 16V
C022	9965 000 27900	0.22µF 20% 50V 0603
C023	9965 000 27900	0.22µF 20% 50V 0603
C026	9965 000 14011	22pF 5% 50V
C027	9965 000 14011	22pF 5% 50V
C029	9965 000 14069	100µF 20% 16V
C083	4822 124 40196	220µF 20% 16V
C084	9965 000 17523	10nF +80%-20% 50V
C085	9965 000 14070	220µF 20% 16V
C086	9965 000 17523	10nF +80%-20% 50V
C090	9965 000 14070	220µF 20% 16V
C091	9965 000 14008	0.1uF 50V +80%~-20%
C092	9965 000 14008	0.1uF 50V +80%~-20%
C093	9965 000 14070	220µF 20% 16V
C100	9965 000 14075	10µF 20% 50V
C101	9965 000 13965	100pF 5% 50V
C102	9965 000 20344	10nF 50V +80-20% 0603
C103	9965 000 15805	100µF 20% 10V
C105	9965 000 14076	47µF 20% 50V
C106	9965 000 20344	10nF 50V +80-20% 0603
C107	9965 000 20344	10nF 50V +80-20% 0603
C108	9965 000 20344	10nF 50V +80-20% 0603
C109	9965 000 20344	10nF 50V +80-20% 0603
C110	9965 000 20344	10nF 50V +80-20% 0603
C111	9965 000 20344	10nF 50V +80-20% 0603
C114	9965 000 13965	100pF 5% 50V
C115	9965 000 14008	0.1uF 50V +80%~-20%
C117	9965 000 27374	47nF+80/-20% 50V
C200	9965 000 27860	10µF /-20% 16V
C201	9965 000 27900	0.22µF 20% 50V 0603
C203	9965 000 28015	22µF 20% 50V
C204	9965 000 27341	2200pF 10% 50V 0603
C205	9965 000 32924	0.022µF 50V 0603
C206	9965 000 31805	0.15µF 5% 63V
C207	9965 000 20356	1000pF 10% 50V 0603
C208	9965 000 27860	10µF /-20% 16V
C209	9965 000 20356	1000pF 10% 50V 0603
C210	9965 000 32924	0.022µF 50V 0603
C211	9965 000 27900	0.22µF 20% 50V 0603
C212	9965 000 14069	100µF 20% 16V
C213	9965 000 20356	1000pF 10% 50V 0603
C214	9965 000 31222	6800pF 10% 50V
C215	9965 000 44701	2.2µF 10% 50V
C216	9965 000 20344	10nF 50V +80-20% 0603
C217	9965 000 14008	0.1uF 50V +80%~-20%
C219	9965 000 14069	100µF 20% 16V
C219A	9965 000 14069	100µF 20% 16V
C222	9965 000 14008	0.1uF 50V +80%~-20%
C223	9965 000 15805	100µF 20% 10V
C224	9965 000 14008	0.1uF 50V +80%~-20%
C225	9965 000 27860	10µF /-20% 16V
C227	9965 000 27860	10µF /-20% 16V
C228	9965 000 28015	22µF 20% 50V
C229	9965 000 14008	0.1uF 50V +80%~-20%
C230A	9965 000 27860	10µF /-20% 16V
C231	9965 000 22807	0.1µF 50V 20%
C232	9965 000 32924	0.022µF 50V 0603
C234	9965 000 14037	1µF 20% 50V
C235	9965 000 14008	0.1uF 50V +80%~-20%
C235A	9965 000 27860	10µF /-20% 16V
C236	9965 000 28015	22µF 20% 50V
C237	9965 000 28015	22µF 20% 50V
C238	9965 000 14037	1µF 20% 50V
C239	9965 000 14037	1µF 20% 50V
C241	9965 000 27860	10µF /-20% 16V
C242	9965 000 14008	0.1uF 50V +80%~-20%
C243	9965 000 14008	0.1uF 50V +80%~-20%
C244	9965 000 14008	0.1uF 50V +80%~-20%
C245	9965 000 14008	0.1uF 50V +80%~-20%
C246	9965 000 14008	0.1uF 50V +80%~-20%
C248	9965 000 14008	0.1uF 50V +80%~-20%
C249	9965 000 14008	0.1uF 50V +80%~-20%
C250	9965 000 27860	10µF /-20% 16V
C251	9965 000 14008	0.1uF 50V +80%~-20%
C252	9965 000 27341	2200pF 10% 50V 0603
C253	9965 000 27871	33µF 20% 16V
C254	9965 000 13965	100pF 5% 50V
C255	9965 000 27900	0.22µF 20% 50V 0603
C256	9965 000 27900	0.22µF 20% 50V 0603
C257	9965 000 15182	47µF 20% 25V
C258	9965 000 14008	0.1uF 50V +80%~-20%
C259	9965 000 13965	100pF 5% 50V
C260	9965 000 27900	0.22µF 20% 50V 0603
C261	9965 000 27900	0.22µF 20% 50V 0603
C262	9965 000 13961	47µF 20% 16V
C264	9965 000 31412	22nF 10% 50V
C265	9965 000 28015	22µF 20% 50V
C266	9965 000 28015	22µF 20% 50V
C267	9965 000 14008	0.1uF 50V +80%~-20%
C268	9965 000 13965	100pF 5% 50V
C270	9965 000 27341	2200pF 10% 50V 0603
C271	9965 000 44702	220nF 10% 16V
C272	9965 000 44702	220nF 10% 16V
C281	9965 000 27300	0.01µF 10% 50V
C282	9965 000 27300	0.01µF 10% 50V
C283	9965 000 27300	0.01µF 10% 50V
C284	9965 000 27300	0.01µF 10% 50V
C300	9965 000 15686	100µF 20% 50V
C307	9965 000 15182	47µF 20% 25V
C308	9965 000 22805	220µUF 25V +/-20%
C313	9965 000 14039	4.7µF 20% 50V
C323	9965 000 14598	100µF 20% 35V
C324	9965 000 14036	100µF 20% 25V
C325	9965 000 22941	0.33µF 63V 5% MPE
C334	9965 000 30713	2.2nF 10% 50V
C337	9965 000 27303	0.033µF 10% 50V
C342	9965 000 15112	0.1µF 5% 50V
C350	9965 000 14010	1500pF 10% 50V
C351	9965 000 27341	2200pF 10% 50V 0603
C360	9965 000 15686	100µF 20% 50V
C400	9965 000 24628	22µF 250V +/-20%
C401	9965 000 15183	220pF 500V 10%
C402	9965 000 15085	1000µF 20% 25V
C404	9965 000 17521	22nF 5% 63V
C405	9965 000 14008	0.1uF 50V +80%~-20%
C406	9965 000 15085	1000µF 20% 25V
C407	9965 000 20344	10nF 50V +80-20% 0603
C408	9965 000 44704	0.0033µF 5% 1.6kV
C410	9965 000 44706	0.0068µF 5% 1.6kV
C411	9965 000 44707	0.027µF 5% 400V
C412	9965 000 15682	Electrolytic Capacitor
C413	9965 000 44705	6200pF 5% 1.6kV
C414	9965 000 44703	0.39µF 5% 400V
C415	9965 000 15683	1000µF 35V 20%
C416	9965 000 15683	1000µF 35V 20%
C417	9965 000 14039	4.7µF 20% 50V
C418	9965 000 15183	220pF 500V 10%
C419	9965 000 15183	220pF 500V 10%
C420	9965 000 15188	4700pF 250Vac +80-20%
C421	9965 000 24355	0.1µF 100V 5% MPE
C423	9965 000 15090	100µF 20% 160V
C424	9965 000 14008	0.1uF 50V +80%~-20%
C503	9965 000 24628	22µF 250V +/-20%
C504	9965 000 44678	0.033µF5% 250V
C505	9965 000 44382	1000pF 10% 2kV
C511	9965 000 20346	330pF 5% 50V 0603
C512	9965 000 44679	1000pF 10% 250V
C521	9965 000 20346	330pF 5% 50V 0603
C522	9965 000 44679	1000pF 10% 250V
C531	9965 000 20346	330pF 5% 50V 0603
C532	9965 000 44679	1000pF 10% 250V
C540	9965 000 14921	10µF 20% 250V
C600	9965 000 15084	22µF 20% 16V
C601	9965 000 27305	4700pF 10% 50V 0603
C602	9965 000 15113	220nF 5% 50V
C603	9965 000 14069	100µF 20% 16V
C604	9965 000 15084	22µF 20% 16V
C605	9965 000 27305	4700pF 10% 50V 0603
C606	9965 000 15113	220nF 5% 50V
C607	9965 000 14069	100µF 20% 16V
C608	9965 000 14069	100µF 20% 16V
C609	9965 000 14037	1µF 20% 50V
C610	9965 000 14069	100µF 20% 16V
C611	9965 000 14599	470µF 20% 16V
C612	9965 000 27900	0.22µF 20% 50V 0603
C613	9965 000 14069	100µF 20% 16V
C614	9965 000 14599	470µF 20% 16V
C615	9965 000 14069	100µF 20% 16V
C616	9965 000 14599	470µF 20% 16V
C617	9965 000 27900	0.22µF 20% 50V 0603
C618	9965 000 27900	0.22µF 20% 50V 0603
C619	9965 000 13961	47µF 20% 16V
C621	9965 000 14069	100µF 20% 16V
C622	9965 000 14069	100µF 20% 16V
C801	9965 000 44731	33µF 20% 275V
C802	9965 000 44730	0.1µF 20 275V

C804	9965 000 15188	4700pF 250Vac +80-20%
C804A	9965 000 17914	470pF 10% 400V
C805	9965 000 15188	4700pF 250Vac +80-20%
C805A	9965 000 17914	470pF 10% 400V
C806	9965 000 38929	470µF 200V 20%
C807	9965 000 44381	10nF 10% 500V
C808	9965 000 44728	10nF 20% 1kV
C809	9965 000 44727	220pF 10% 1kV
C810	9965 000 13963	220pF 5% 50V
C811	9965 000 14037	1µF 20% 50V
C812	9965 000 34505	3300pF 50V 10%
C813	9965 000 13962	0.1µF 5% 50V
C814	9965 000 17906	10µF 20% 35V
C815	9965 000 29743	680pF 1kV 10%
C820	9965 000 44729	220pF 10% 1kV
C823	9965 000 34497	220µF 160V 20%
C824	9965 000 44381	10nF 10% 500V
C824A	9965 000 44723	33µF 20% 35V
C825	9965 000 14008	0.1uF 50V +80%~-20%
C826	9965 000 20357	1000PF 50V 5% 0603
C828	9965 000 14069	100µF 20% 16V
C829	9965 000 34533	4700Ω2F 16V 20%
C830	9965 000 15183	220pF 500V 10%
C831	9965 000 17510	1000µF 16V 20%
C832	9965 000 14070	220µF 20% 16V
C833	9965 000 20344	10nF 50V +80-20% 0603
C834	9965 000 15099	0.01µF +80%~20% 50V
C835	9965 000 20344	10nF 50V +80-20% 0603
C837	9965 000 17510	1000µF 16V 20%
C840	9965 000 15183	220pF 500V 10%
C840A	9965 000 22936	2200pF 400Vac 20%
C842	9965 000 15099	0.01µF +80%~20% 50V
C850	9965 000 15183	220pF 500V 10%
C851	9965 000 14067	1000µF 20% 16V
C852	9965 000 15099	0.01µF +80%~20% 50V
C853	9965 000 27299	3.3µF 20% 50V
C902	9965 000 13965	100pF 5% 50V
C903	9965 000 13965	100pF 5% 50V
C904	9965 000 27860	10µF /-20% 16V
C905	9965 000 27860	10µF /-20% 16V
C912	9965 000 13965	100pF 5% 50V
C914	9965 000 13965	100pF 5% 50V
C915	9965 000 13965	100pF 5% 50V
C917	9965 000 28015	22µF 20% 50V
C918	9965 000 14037	1µF 20% 50V
C919	9965 000 28015	22µF 20% 50V
C922	9965 000 29848	10pF 5% 50V
C923	9965 000 29848	10pF 5% 50V
C926	9965 000 13965	100pF 5% 50V
C927	9965 000 13965	100pF 5% 50V
C928	9965 000 13965	100pF 5% 50V
C929	9965 000 13965	100pF 5% 50V
C930	9965 000 13965	100pF 5% 50V
C960	9965 000 13965	100pF 5% 50V
C961	9965 000 13965	100pF 5% 50V

-WW-

R009	9965 000 14049	100Ω 5% 0.16W
R01	9965 000 32057	4.7kΩ 1/10W 0603
R010	9965 000 32037	100Ω 1/10W 0603
R011	9965 000 32037	100Ω 1/10W 0603
R012	9965 000 44725	1.5Ω 3W
R014	9965 000 32058	47kΩ 1/10W 0603
R015	9965 000 32057	4.7kΩ 1/10W 0603
R016	9965 000 29781	12kΩ 1/10 0603
R017	9965 000 32037	100Ω 1/10W 0603
R018	9965 000 32039	10kΩ 1/10W 0603
R02	9965 000 32049	27kΩ 5% 1/10W
R022	9965 000 12519	1k 5% 0.16W
R023	4822 111 31047	5K6 5% 1/6W
R024	9965 000 14049	100Ω 5% 0.16W
R025	9965 000 32037	100Ω 1/10W 0603
R026	9965 000 32037	100Ω 1/10W 0603
R027	9965 000 32051	3.3kΩ 1/10W 0603
R029	9965 000 32051	3.3kΩ 1/10W 0603
R03	9965 000 32038	1kΩ 1/10W 0603
R030	4822 111 31038	3.9k 5% 0.16W
R031	9965 000 14049	100Ω 5% 0.16W
R032	4822 111 31047	5K6 5% 1/6W
R033	9965 000 12515	2.2k 5% 0.16W
R034	9965 000 32037	100Ω 1/10W 0603
R035	9965 000 32037	100Ω 1/10W 0603
R036	9965 000 32037	100Ω 1/10W 0603
R039	9965 000 32038	1kΩ 1/10W 0603
R045	9965 000 32039	10kΩ 1/10W 0603
R047	9965 000 32045	2.2kΩ 1/10W 0603
R048	9965 000 32051	3.3kΩ 1/10W 0603
R049	9965 000 32058	47kΩ 1/10W 0603
R050	9965 000 32046	22kΩ 5% 1/10W
R051	9965 000 32051	3.3kΩ 1/10W 0603
R052	9965 000 32039	10kΩ 1/10W 0603
R086	9965 000 15066	10Ω 5% 0.25W
R087	9965 000 17938	750Ω 5% 0.16W
R090	9965 000 17494	120Ω 5% 1/6W
R092	9965 000 27224	0Ω 5% 1/10W 0603
R100	9965 000 31396	68kΩ 1/10W 0603
R101	9965 000 32039	10kΩ 1/10W 0603
R103	9965 000 32055	39kΩ 5% 1/10W
R104	9965 000 30773	47Ω 1/10W 5% 0603
R105	9965 000 32057	4.7kΩ 1/10W 0603
R106	9965 000 32057	4.7kΩ 1/10W 0603
R107	9965 000 32039	10kΩ 1/10W 0603
R109	9965 000 30773	47Ω 1/10W 5% 0603
R111	4822 053 10561	560Ω 5% 1W
R112	9965 000 32039	10kΩ 1/10W 0603
R114	9965 000 44420	51Ω 1/10W 0603
R115	9965 000 12485	150Ω 5% 0.16W
R116	9965 000 27283	680Ω 1/10W 0603
R117	9965 000 32041	150Ω 1/10W 0603
R118	9965 000 30770	22Ω 1/10W 0603
R120	9965 000 30770	22Ω 1/10W 0603
R121	9965 000 30770	22Ω 1/10W 0603
R122	9965 000 32057	4.7kΩ 1/10W 0603
R123	9965 000 32051	3.3kΩ 1/10W 0603
R124	9965 000 32037	100Ω 1/10W 0603
R130	9965 000 32037	100Ω 1/10W 0603
R131	9965 000 32037	100Ω 1/10W 0603
R200	9965 000 31396	68kΩ 1/10W 0603
R201	9965 000 32055	39kΩ 5% 1/10W
R202	9965 000 32038	1kΩ 1/10W 0603
R203	9965 000 32038	1kΩ 1/10W 0603
R204	9965 000 32038	1kΩ 1/10W 0603
R205	9965 000 27283	680Ω 1/10W 0603
R206	9965 000 32055	39kΩ 5% 1/10W
R207	9965 000 32037	100Ω 1/10W 0603
R208	9965 000 32037	100Ω 1/10W 0603
R209	9965 000 32037	100Ω 1/10W 0603
R210	9965 000 29781	12kΩ 1/10 0603
R211	9965 000 27224	0Ω 5% 1/10W 0603
R217	9965 000 32058	47kΩ 1/10W 0603
R221	9965 000 32039	10kΩ 1/10W 0603
R222	9965 000 32037	100Ω 1/10W 0603
R223	9965 000 32038	1kΩ 1/10W 0603
R225	9965 000 32038	1kΩ 1/10W 0603
R226	9965 000 27259	Fuse 1MΩ 5% 1/10W
R227	9965 000 31216	270kΩ 1/10W 5%
R228	9965 000 32044	220Ω 1/10W 0603
R229	9965 000 32057	4.7kΩ 1/10W 0603
R230	9965 000 32037	100Ω 1/10W 0603
R231	9965 000 32037	100Ω 1/10W 0603
R232	9965 000 32037	100Ω 1/10W 0603
R234	9965 000 27919	56kΩ 5% 1/10W
R235	9965 000 32058	47kΩ 1/10W 0603
R236	9965 000 32038	1kΩ 1/10W 0603
R237	9965 000 12515	2.2k 5% 0.16W
R238	9965 000 32057	4.7kΩ 1/10W 0603
R240	9965 000 31217	390kΩ 1/10W 5%
R241	9965 000 32053	390Ω 1/10W 0603
R244	9965 000 32051	3.3kΩ 1/10W 0603
R245	9965 000 32059	0.47MΩ 1/10W 5%
R250	9965 000 32038	1kΩ 1/10W 0603
R251	9965 000 32038	1kΩ 1/10W 0603
R252	9965 000 32058	47kΩ 1/10W 0603
R253	9965 000 32058	47kΩ 1/10W 0603
R255	9965 000 44693	220Ω 5% 1/2W
R256	9965 000 44693	220Ω 5% 1/2W
R257	9965 000 44693	220Ω 5% 1/2W
R270	9965 000 27236	33kΩ 1/10W 0603
R271	9965 000 08285	18k 5% 0.16W
R282	9965 000 13958	68Ω 5% 0.17W
R283	9965 000 44699	430? 5% 1/10W
R284	9965 000 27226	100kΩ 1/10W 0603
R285	9965 000 32056	470kΩ 5% 1/10W
R286	9965 000 27224	0Ω 5% 1/10W 0603
R287	9965 000 32037	100Ω 1/10W 0603
R300	9965 000 29821	820Ω 5% 1/10W
R313	9965 000 22920	1Ω 1W 5% Wire Wound
R314	9965 000 32038	1kΩ 1/10W 0603
R315	9965 000 15664	2.2kΩ 5% 1/4W
R316	9965 000 32038	1kΩ 1/10W 0603
R321	9965 000 44376	1Ω 5% 2W
R324	9965 000 44416	180Ω 5% 2W
R350	9965 000 32045	2.2kΩ 1/10W 0603
R401	9965 000 32936	680Ω 5% 2W
R406	9965 000 32056	470kΩ 5% 1/10W
R407	9965 000 17499	1Ω 1/2W 5% Res. Fuse
R409	9965 000 44694	18Ω 5% 1/2W
R410	9965 000 44694	18Ω 5% 1/2W
R411	9965 000 15175	120Ω 2W 5% Metal Oxide
R412	9965 000 32039	10kΩ 1/10W 0603
R413	9965 000 17864	820Ω 5% 0.16W
R418	9965 000 31396	68kΩ 1/10W 0603
R419	9965 000 44696	68Ω 5%
R420	9965 000 44697	0.56Ω 2W
R421	9965 000 44692	Fuse 5.6Ω 5% 2W
R422	9965 000 44692	Fuse 5.6Ω 5% 2W
R424	4822 111 31038	3.9k 5% 0.16W
R425	9965 000 44695	10kΩ 5% 1/2W
R426	9965 000 44691	Fuse 0.47Ω 5% 1/2W
R427	9965 000 44691	Fuse 0.47Ω 5% 1/2W
R429	9965 000 12519	1k 5% 0.16W
R433	9965 000 44695	10kΩ 5% 1/2W
R435	9965 000 44689	150kΩ 5% 1/2W
R436	9965 000 27224	0Ω 5% 1/10W 0603
R437	9965 000 32043	15kΩ 1/10W 0603
R438	9965 000 44698	36kΩ 5% 1/10W
R439	9965 000 44698	36kΩ 5% 1/10W
R440	9965 000 23744	150kΩ 5% 0.17W
R442	9965 000 27226	100kΩ 1/10W 0603
R443	9965 000 27236	33kΩ 1/10W 0603
R501	9965 000 15771	1KΩ 1/4W 5% Carb. Film
R505	9965 000 22916	33Ω 1W 5% Metal Oxide
R511	9965 000 30773	47Ω 1/10W 5% 0603
R512	9965 000 32039	10kΩ 1/10W 0603
R513	9965 000 27336	270Ω 5% 1/10W
R514	9965 000 30769	10Ω 5% 1/10W
R515	9965 000 22919	15kΩ 5% 3W 5%
R516	0300 206 47131	470Ω 5% 1/4W
R517	9965 000 32060	560Ω 1/10W 0603
R518	0300 206 47131	470Ω 5% 1/4W
R519	9965 000 44676	1kΩ 10% 1/2W
R521	9965 000 30773	47Ω 1/10W 5% 0603
R522	9965 000 32039	10kΩ 1/10W 0603
R523	9965 000 27336	270Ω 5% 1/10W
R524	9965 000 30769	10Ω 5% 1/10W
R525	9965 000 22919	15kΩ 5% 3W 5%
R526	0300 206 47131	470Ω 5% 1/4W
R527	9965 000 32060	560Ω 1/10W 0603
R528	0300 206 47131	470Ω 5% 1/4W
R529	9965 000 44676	1kΩ 10% 1/2W
R531	9965 000 30773	47Ω 1/10W 5% 0603
R532	9965 000 32039	10kΩ 1/10W 0603
R533	9965 000 27336	270Ω 5% 1/10W
R534	9965 000 30769	10Ω 5% 1/10W
R535	9965 000 22919	15kΩ 5% 3W 5%
R536	0300 206 47131	470Ω 5% 1/4W
R537	9965 000 32060	560Ω 1/10W 0603
R538	0300 206 47131	470Ω 5% 1/4W
R539	9965 000 44676	1kΩ 10% 1/2W
R540	9965 000 44677	2.2MΩ 5% 1/4W
R541	9965 000 24633	1.5kΩ 10% 1/2W
R542	0300 206 47131	470Ω 5% 1/4W
R600	9965 000 32057	4.7kΩ 1/10W 0603
R601	9965 000 32051	3.3kΩ 1/10W 0603
R602	9965 000 32037	100Ω 1/10W 0603
R603	9965 000 32057	4.7kΩ 1/10W 0603
R604	9965 000 32051	3.3kΩ 1/10W 0603
R605	9965 000 32037	100Ω 1/10W 0603
R606	9965 000 32048	2.7kΩ 1/10W 0603
R607	9965 000 32048	2.7kΩ 1/10W 0603
R608	9965 000 32048	2.7kΩ 1/10W 0603
R609	9965 000 32038	1kΩ 1/10W 0603
R610	9965 000 32038	1kΩ 1/10W 0603
R611	9965 000 27236	33kΩ 1/10W 0603
R611A	9965 000 34531	0.12Ω 2W Wire Wound
R613	9965 000 32039	10kΩ 1/10W 0603
R801	9965 000 17901	1M 5% 0.5W
R810	9965 000 44719	0.47kΩ 5% 2W
R811	9965 000 12519	1k 5% 0.16W
R812	9965 000 12519	1k 5% 0.16W
R813	9965 000 14059	22Ω 5% 0.25W
R814	9965 000 44405	1.2kΩ 5% 1/4W
R815	9965 000 14049	100Ω 5% 0.16W
R816A	9965 000 22804	0.22Ω 2W Wire Wound
R817	9965 000 44718	120kΩ 5% 1W
R818	4822 111 31023	47k 5% 0.16W
R820	9965 000 22998	4.7Ω 1W 5% Res. Fuse
R821	9965 000 44724	6.8kΩ 5% 5W
R822	9965 000 15778	33kΩ 5% 2W
R823	9965 000 44717	100kΩ 1% 1/2W
R824	9965 000 44690	RES.M.F 3.9K 1/6W /-1%
R824A	9965 000 44690	RES.M.F 3.9K 1/6W /-1%
R825	9965 000 27236	33kΩ 1/10W 0603
R826	9965 000 15664	2.2kΩ 5% 1/4W
R826A	9965 000 15777	22kΩ 5% 2W
R827	9965 000 44716	750Ω 1% 1/6W
R828	9965 000 32048	2.7kΩ 1/10W 0603
R829	9965 000 32058	47kΩ 1/10W 0603
R829A	9965 000 32057	4.7kΩ 1/10W 0603
R831	9965 000 44725	1.5Ω 3W
R832	9965 000 15771	1KΩ 1/4W 5% Carb. Film
R833	9965 000 32045	2.2kΩ 1/10W 0603
R840A	9965 000 17902	8.2M 5% 1W
R850	9965 000 34537	FUSE 3A 250VAC
R902	9965 000 27226	100kΩ 1/10W 0603
R903	9965 000 27226	100kΩ 1/10W 0603
R904	9965 000 32050	330Ω 1/10W 0603
R905	9965 000 32050	330Ω 1/10W 0603
R908	9965 000 32038	1kΩ 1/10W 0603
R910	9965 000 27240	75Ω 1/10W 0603

R912	9965 000 32038	1kΩ 1/10W 0603
R913	9965 000 32058	47kΩ 1/10W 0603
R914	9965 000 32058	47kΩ 1/10W 0603
R915	9965 000 12519	1k 5% 0.16W
R916	9965 000 12519	1k 5% 0.16W
R917	9965 000 27240	75Ω 1/10W 0603
R919	9965 000 32037	100Ω 1/10W 0603
R921	9965 000 27240	75Ω 1/10W 0603
R922	9965 000 27240	75Ω 1/10W 0603
R923	9965 000 27240	75Ω 1/10W 0603
R924	9965 000 27338	82Ω 5% 1/10W
R925	9965 000 27338	82Ω 5% 1/10W
R926	9965 000 32037	100Ω 1/10W 0603
R927	9965 000 32037	100Ω 1/10W 0603
R928	9965 000 32037	100Ω 1/10W 0603
R929	9965 000 32037	100Ω 1/10W 0603
R932	9965 000 32037	100Ω 1/10W 0603
R960	9965 000 32058	47kΩ 1/10W 0603
R961	9965 000 32058	47kΩ 1/10W 0603
R962	9965 000 32038	1kΩ 1/10W 0603
R963	9965 000 32038	1kΩ 1/10W 0603
RT801	9965 000 27862	POSISTOR MZ75-9RM
RT802	9965 000 44720	NTC 2.5D-18LCS

L001	9965 000 14082	10µH 10%
L002	9965 000 14082	10µH 10%
L101	9965 000 14082	10µH 10%
L102	9965 000 15121	1µH 10%
L200	9965 000 14082	10µH 10%
L201	9965 000 15121	1µH 10%
L202	9965 000 15121	1µH 10%
L203	9965 000 14082	10µH 10%
L204	9965 000 14082	10µH 10%
L205	9965 000 14082	10µH 10%
L206	9965 000 14082	10µH 10%
L207	9965 000 14082	10µH 10%
L208	9965 000 13966	Ferr. Bead LB3.5X6
L209	9965 000 13966	Ferr. Bead LB3.5X6
L210	9965 000 13966	Ferr. Bead LB3.5X6
L211	9965 000 13966	Ferr. Bead LB3.5X6
L212	9965 000 15122	0.6µH 10%
L400	9965 000 44710	Linearity Coil 31µH
L403	9965 000 15705	600µH
L404	9965 000 44711	4.7MHz TD1016A4701
L501	9965 000 15591	22µH 10%
L801	9965 000 44732	Choke Coil 10µH 10%
L802	9965 000 13966	Ferr. Bead LB3.5X6
L803	9965 000 32509	Coil SL0811-6R8K2R4
L804	9965 000 32509	Coil SL0811-6R8K2R4
L811	9965 000 13966	Ferr. Bead LB3.5X6
L812	9965 000 13966	Ferr. Bead LB3.5X6
T401	9965 000 44709	Transformer BCT-101
T402	9965 000 44726	29"" LOT JF0501-20502
T801	9965 000 44734	10MHLCL-2802B
T802	9965 000 44735	Line Filter LGH2V 40µH
T803	9965 000 44737	Transf. BCK-35-0453

D001	9965 000 15651	5V-5V2 1/2W
D002	9965 000 15651	5V-5V2 1/2W
D003	4822 130 30621	1N4148
D004	9965 000 15651	5V-5V2 1/2W
D006	4822 130 30621	1N4148
D008	4822 130 30621	1N4148
D01	4822 130 31438	1N4001G
D010	9965 000 15817	3V9 1/2W 5%
D02	4822 130 30621	1N4148
D080	9965 000 15817	3V9 1/2W 5%
D081	9965 000 15651	5V-5V2 1/2W
D082	4822 130 30621	1N4148
D100	4822 130 30621	1N4148
D102	9965 000 15716	33V 5% 0.5W
D204	4822 130 83206	BZX79-B5V6
D226	4822 130 30621	1N4148
D280	4822 130 34398	BZX79-B24
D281	4822 130 30621	1N4148
D282	4822 130 30621	1N4148
D283	4822 130 30621	1N4148
D284	4822 130 83338	LL4148
D285	4822 130 83338	LL4148
D300	4822 130 30621	1N4148
D305	4822 130 30621	1N4148
D306	9965 000 15817	3V9 1/2W 5%
D307	4822 130 30621	1N4148
D308	4822 130 30621	1N4148
D309	4822 130 31438	1N4001G
D400	9965 000 13880	FR104-B OR
D401	4822 130 41275	BY228
D402	9965 000 13880	FR104-B OR
D404	9965 000 44682	FR105
D405	9965 000 13880	FR104-B OR
D406	9965 000 13880	FR104-B OR
D408	4822 130 83206	BZX79-B5V6
D409	4822 130 30621	1N4148
D411	4822 130 31438	1N4001G
D412	4822 130 31438	1N4001G
D413	4822 130 34233	BZX79-B5V1
D414	4822 130 30621	1N4148
D415	4822 130 30621	1N4148
D511	4822 130 83338	LL4148
D521	4822 130 83338	LL4148
D531	4822 130 83338	LL4148
D540	5322 130 34574	1N4004G
D623	4822 130 30621	1N4148
D624	4822 130 30621	1N4148
D625	4822 130 30621	1N4148
D626	4822 130 30621	1N4148
D810	9965 000 13880	FR104-B OR
D811	9965 000 13880	FR104-B OR
D812	4822 130 30621	1N4148
D813	4822 130 34167	BZX79-B6V2
D814	9965 000 20421	1H8
D815	9965 000 15716	33V 5% 0.5W
D820	9965 000 44366	Rectifier RU3A
D821	4822 130 30621	1N4148
D822	9965 000 15651	5V-5V2 1/2W
D823	9965 000 44715	9V1 500MW
D830	9965 000 44714	RU3YX
D831	4822 130 31438	1N4001G
D832	9965 000 15652	8V1-8V5 1/2W
D840	9965 000 44714	RU3YX
D850	9965 000 44714	RU3YX
D851	4822 130 31438	1N4001G
D852	4822 130 31438	1N4001G
D901	4822 130 83206	BZX79-B5V6
D903	4822 130 83206	BZX79-B5V6
D904	4822 130 83206	BZX79-B5V6
D905	4822 130 83206	BZX79-B5V6
D906	4822 130 83206	BZX79-B5V6
D907	4822 130 83206	BZX79-B5V6
D911	9965 000 44680	SMD Diode
D912	9965 000 44680	SMD Diode
D913	9965 000 44680	SMD Diode
D914	9965 000 44680	SMD Diode
D919	9965 000 44680	SMD Diode
D920	9965 000 44680	SMD Diode
D921	9965 000 44680	SMD Diode
D922	9965 000 44680	SMD Diode
DB801	9965 000 22884	D3SB60 Bridge Rect.

IC001	9965 000 44687	IC M24C64-WBN6P
IC090	4822 209 80817	L7805CV
IC200	9965 000 44688	TDA12000H/N1F00
IC201	9965 000 44686	LD1117S18TR
IC202	9965 000 44686	LD1117S18TR
IC301	9965 000 30670	STV8172
IC601	9965 000 44401	TEA2025B2X2W
IC801	9965 000 34524	STR-W6735
IC802	9965 000 27867	PS2561L1-1-V
IC803	4822 209 81397	TL431CLPST
Q001	4822 130 63693	BC847A
Q01	9965 000 34540	2SC2236-Y
Q080	9965 000 44683	2SD667A-C
Q081	9965 000 44683	2SD667A-C
Q101	9965 000 14974	2SC3779D
Q102	9965 000 44403	MOSFET UM6K1N
Q103	9965 000 44403	MOSFET UM6K1N
Q104	4822 130 63693	BC847A
Q105	9965 000 31753	BSH103
Q204	9965 000 44395	BC857A (PNP)
Q205	9965 000 44395	BC857A (PNP)
Q206	9965 000 44395	BC857A (PNP)
Q207	9965 000 44395	BC857A (PNP)
Q208	9965 000 44395	BC857A (PNP)
Q280	9965 000 44395	BC857A (PNP)
Q281	4822 130 63693	BC847A
Q282	9965 000 44395	BC857A (PNP)
Q402	4822 130 41053	BC639
Q403	9965 000 44685	BC846B
Q404	9965 000 44395	BC857A (PNP)
Q405	9965 000 44684	2SD2638
Q407	9965 000 22890	IRF630MFP
Q408	4822 130 63693	BC847A
Q409	9965 000 44395	BC857A (PNP)
Q511	9965 000 15587	2SC4544
Q512	4822 130 41782	BF422
Q513	9965 000 27851	BF423 (PNP)
Q521	9965 000 15587	2SC4544
Q522	4822 130 41782	BF422
Q523	9965 000 27851	BF423 (PNP)
Q531	9965 000 15587	2SC4544
Q532	4822 130 41782	BF422
Q533	9965 000 27851	BF423 (PNP)
Q601	4822 130 63693	BC847A
Q602	9965 000 44395	BC857A (PNP)
Q603	4822 130 63693	BC847A
Q604	4822 130 63693	BC847A
Q605	9965 000 44395	BC857A (PNP)
Q820	9965 000 17893	2SC2688L
Q821	9965 000 44722	2SD882-P (NPN)
Q822	4822 130 41947	2SC1815Y
Q823	4822 130 41947	2SC1815Y
Q824	4822 130 41782	BF422
Q825	4822 130 41947	2SC1815Y
Q900	4822 130 63693	BC847A
Q901	9965 000 44395	BC857A (PNP)
Q902	4822 130 63693	BC847A
Q903	4822 130 63693	BC847A

Front Control Panel [E]

Various

IR001	9965 000 44885	IR Rec. HRM557BB5100
S008	9965 000 44886	Switch TDTB-3-NP

C001B	9965 000 13961	47µF 20% 16V

R008B	9965 000 12593	47Ω 5% 0.16W
R009B	9965 000 13960	470Ω 5% 0.16W
R010B	4822 111 31038	3.9k 5% 0.16W

D001B	9965 000 34464	BT-102D-31

Side AV & Control Panel [D]

Various

P001D	9965 000 44888	TJC3-2Y/JC25-2Y 600
S001A	9965 000 44886	Switch TDTB-3-NP
S002A	9965 000 44886	Switch TDTB-3-NP
S003A	9965 000 44886	Switch TDTB-3-NP
S004A	9965 000 44886	Switch TDTB-3-NP
S005A	9965 000 44886	Switch TDTB-3-NP

R023A	9965 000 12549	220Ω 55 0.16W
R024A	9965 000 12592	330Ω 5% 0.16W
R025A	9965 000 14056	390Ω 5% 0.17W
R026A	9965 000 13960	470Ω 5% 0.16W
R027A	4822 053 10561	560Ω 5% 1W

11. Revision List

Manual xxxx xxx xxxx.0

- First release.

Manual xxxx xxx xxxx.1

- **Front Page:** TOC corrected.
- **Chapter 7:** Mono Carrier schematic and PWB layout updated with newest version.