

Service
Service
Service



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Service Manual

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1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

- 1.1 Technical Specifications
- 1.2 Connection Overview
- 1.3 Chassis Overview

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

1.1 Technical Specifications

1.1.1 Vision

Display type	: CRT
Screen size	: 29" (72 cm), 4:3
Tuning system	: VST/PLL
TV Colour systems	: PAL D/K and I
Video playback	: NTSC M/N 3.58, 4.43
	: PAL 50
Presets/channels	: 256 channels
Tuner bands	: VHF
	: UHF

1.1.2 Sound

Sound systems	: FM-stereo
	: AV Bi-sonic stereo
Maximum power (W_{RMS})	: 2 x 6

1.1.3 Miscellaneous

Power supply:	
- Mains voltage (V_{AC})	: 160 - 260
- Mains frequency (Hz)	: 50 / 60
Ambient conditions:	
- Temperature range (°C)	: -5 to +45
- Maximum humidity	: 90% R.H.

Power consumption	
- Normal operation (W)	: ≈ 150
- Stand-by (W)	: < 3

1.2 Connection Overview

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

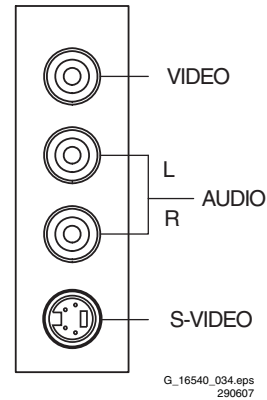


Figure 1-1 Side I/O connections

Cinch: Video CVBS - In, Audio - 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	⊕ ⊖

S-Video (Hosiden): Video Y/C - In

1 - Ground Y	Gnd	⊥
2 - Ground C	Gnd	⊥
3 - Video Y	1 V_{PP} / 75 ohm	⊕ ⊖
4 - Video C	0.3 V_{PP} / 75 ohm	⊕ ⊖

1.2.2 Rear Connections

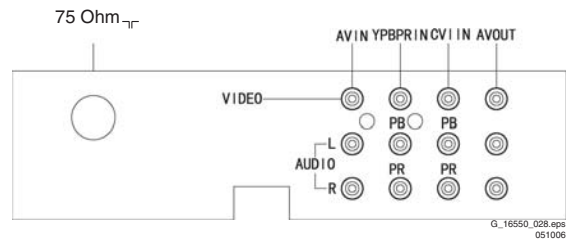


Figure 1-2 Rear connections

Aerial - In

- - IEC-type (EU)	Coax, 75 ohm	⊥
-------------------	--------------	---

Cinch: Video CVBS - In, Audio - 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	⊕ ⊖

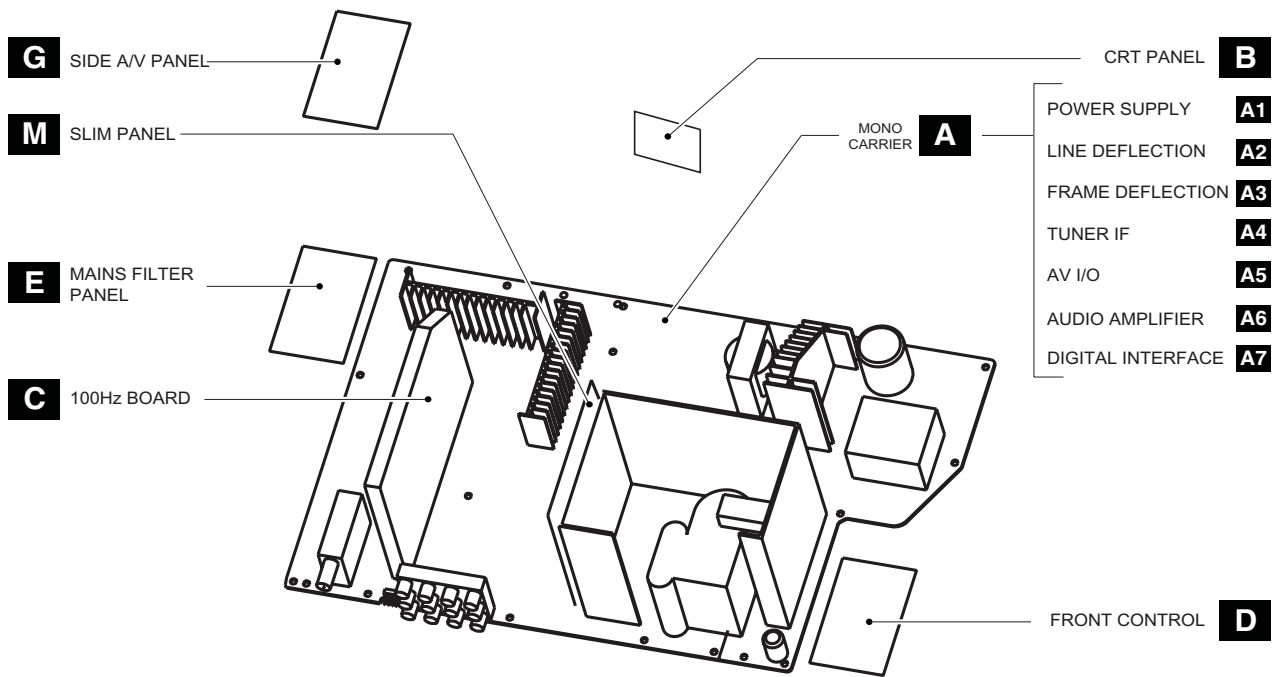
Cinch: Video YPbPr - In

Gn - Video Y	1 V_{PP} / 75 ohm	⊕ ⊖
Bu - Video Pb	0.7 V_{PP} / 75 ohm	⊕ ⊖
Rd - Video Pr	0.7 V_{PP} / 75 ohm	⊕ ⊖

Cinch: Video CVBS - Out, Audio - 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	⊕ ⊖

1.3 Chassis Overview



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Figure 1-3 PWB location

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

- 2.1 Safety Instructions
- 2.2 Maintenance Instructions
- 2.3 Warnings
- 2.4 Notes

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).

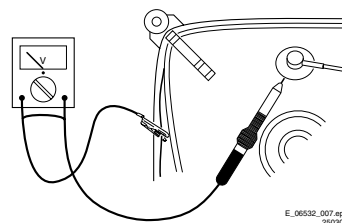


Figure 2-1 Discharge picture tube

- 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 (\perp), or hot ground (\perp), 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 \square and without \square aerial signal. Measure the voltages in the power supply section both in normal operation (\textcircled{I}) and in stand-by (\textcircled{II}). 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.
- Manufactured under license from Dolby Laboratories. "Dolby", "Pro Logic" and the "double-D symbol", are trademarks of Dolby Laboratories.

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 ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- 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

In September 2003, Philips CE introduced a change in the way the serial number (or production number, see Figure 2-2) is composed. From this date on, the **third digit** in the serial number (example: AG2B0335000001) indicates the number of the alternative BOM (Bill of Materials used for producing the specific model of TV set). 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 O.E.M.s.

By looking at the third digit of the serial number, the service technician can see if there is more than one type of B.O.M. used in the production of the TV set he is working with. He can then consult the At Your Service Web site, where he can type in the Commercial Type Version Number of the TV set (e.g. 28PW9515/12), after which a screen will appear that gives information about the number of alternative B.O.M.s used. If the third digit of the serial number contains the number 1 (example: AG1B0335000001), then there is only one B.O.M. version of the TV set on the market. If the third digit is a 2 (example: AG2B0335000001), then there are two different B.O.M.s. Information about 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.

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:

- 4.1 Set Disassembly
- 4.2 Assembly / Board Removal
- 4.3 Set Re-assembly

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

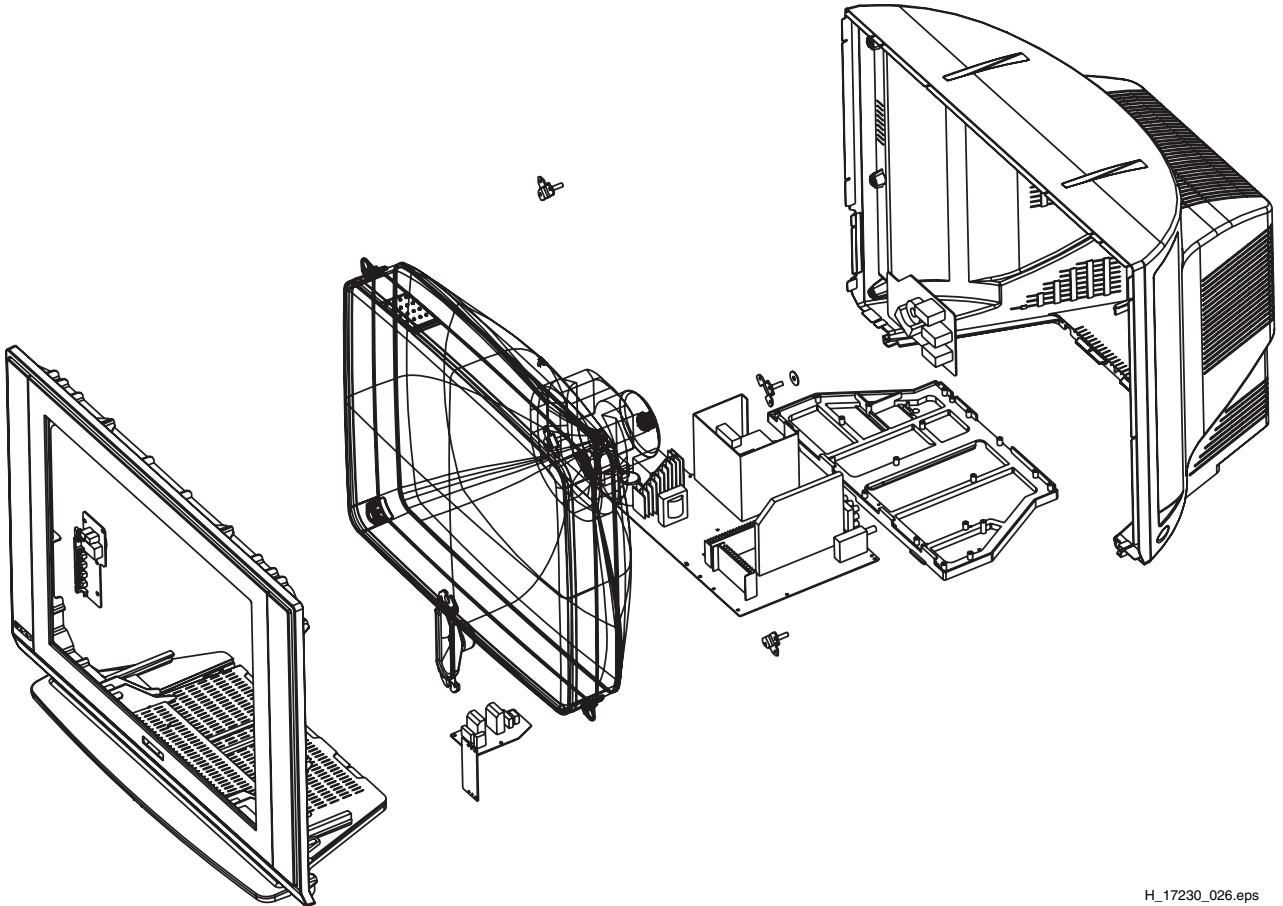
4.1 Set Disassembly

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.
2. Now, pull the rear cover backwards and remove it.



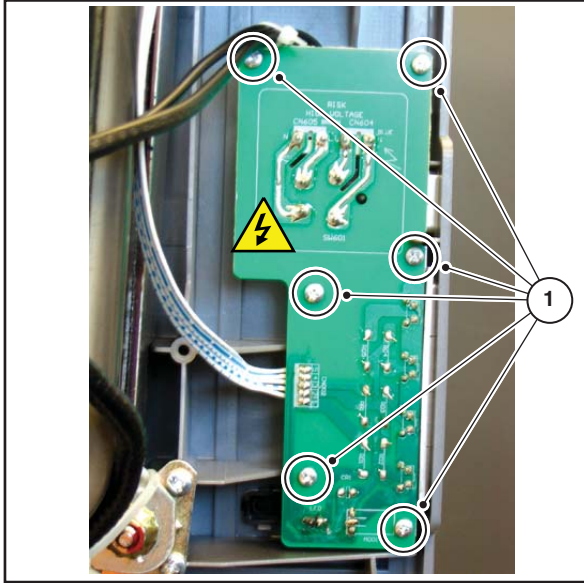
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Figure 4-1 Rear Cover removal

4.2 Assembly / Board Removal

4.2.1 Power Switch and Control Panel removal

1. From the mono carrier disconnect the main power and the keyboard circuit cables. Release the main power cord and the keyboard circuit cable from it's strain reliefs.
2. Then, remove the six fixation screws [1] of the power switch and control panel and remove the board.



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Figure 4-2 Power Switch and Control Panel removal

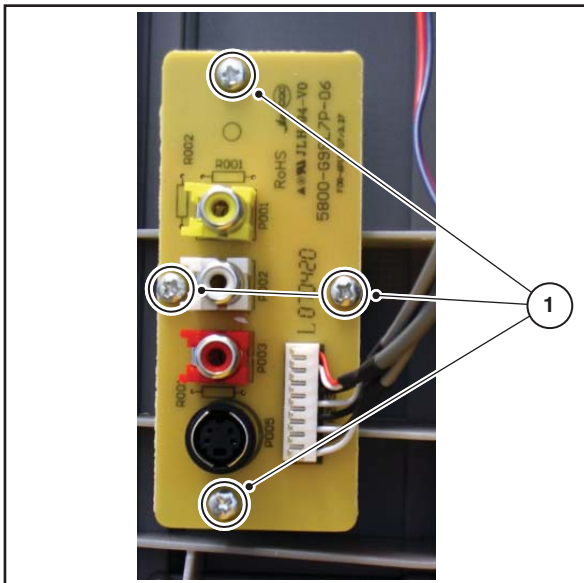
4.3 Set Re-assembly

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 positioned correctly in its guiding brackets (make sure that the strain reliefs are replaced in its correct position and that it will function correctly!).
- All wires/cables are returned in their original positions.

4.2.2 Side I/O Panel removal



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Figure 4-3 Side-I/O panel removal

1. Disconnect the side panel cable from the mono carrier and remove the cable from it's strain reliefs.
2. Then, remove the four fixation screws [1] and remove the board.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

- 5.2 Test Points
- 5.3 Service Modes
- 5.4 Error Codes
- 5.5 Fault Finding

5.1 Service Tools

5.1.1 ComPair

Introduction

ComPair features TV software upgrade possibilities.

Specifications

ComPair consists of a Windows based program and an interface box between PC and the product. The (new) ComPair II interface box is connected **to the PC** via an USB cable. For the TV chassis, the ComPair interface box and the TV communicate via a bi-directional cable via the service connector(s).

How to Connect

This is described in the chassis fault finding database in ComPair.

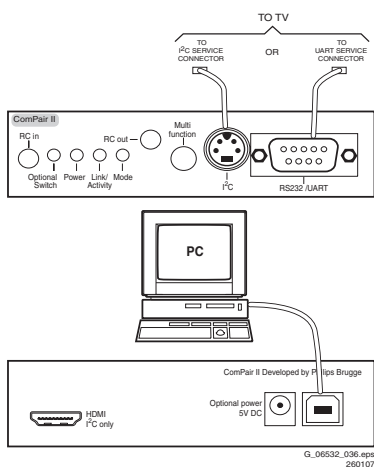


Figure 5-1 ComPair II interface connection

Caution: It is compulsory to connect the TV to the PC as shown in the picture above (with the ComPair interface in between), as the ComPair interface acts as a level shifter. If one connects the TV directly to the PC (via UART), ICs will be blown!

How to Order

ComPair II order codes:

- ComPair II interface: 3122 785 91020.
- ComPair32 CD (update): 3122 785 60160.
- ComPair interface cable: 3122 785 90004.
- ComPair interface extension cable: 3139 131 03791.
- ComPair UART interface cable: 3122 785 90630.
- ComPair UART interface cable for Q52x.x (using 3.5 mm Mini Jack connector): 3104 311 12742.

Note: If you encounter any problems, contact your local support desk

5.2 Test Points

See chapter 6 "Block Diagrams, Testpoint Overviews, and Waveforms".

Perform measurements under the following conditions:

- Service Default Mode.
- Video: colour bar signal.
- Audio: 3 kHz left, 1 kHz right.

5.3 Service Modes

This chassis does not contain a specific Service Mode. Service and Alignment of the TV set can be done via the Factory Mode by the service technician, see further down in this manual.

5.4 Error Codes

Not applicable.

5.5 Fault Finding

5.5.1 Big Snow Dots Visible on the Screen.

Analysis and repair action: according to the problem phenomena, first check:

- (1) Is the antenna signal normal?
- (2) Is the tuner and intermediate-frequency circuit power supply working normally?
- (3) Is the AGC circuit of tuner working normally?
- (4) Is there a problem with the I2C data stream?
- (5) Is there an electricity leak in the circuit layers?

5.5.2 Picture becomes more green after the TV set has been on for more than one hour.

Analysis and repair action: according to the problem phenomena, check the following:

- (1) Is the antenna signal normal?
- (2) If you suspect that there is a heating problem in the channel circuit, or the circuits after the tuner (colour decoder), use a blower to reduce the temperature, and check if this has any effect.
- (3) Interrupt and reconnect the antenna signal to find out if the trouble is in the tuner or the AGC circuit.
- (4) Is there a problem with the I2C data stream?
- (5) Also check the horizontal deflection pulse.

5.5.3 White Raster Only (no Picture Visible).

Analysis and repair action: if the antenna signal is normal: according to the problem phenomena, the trouble range can be divided into six parts: the CPU, the memory chips, the data transport of the I2C circuit, the horizontal and vertical deflection pulse circuit, the CRT power supply circuit, and finally the entire video amplification circuit (including the IF stage). If the CPU or memory have problems, this will also cause problems of I2C data. If the problem still cannot be eliminated, check the load of the I2C lines, namely, the other ICs that are connected to the I2C bus (they may also have a defect and cause a too heavy load on the I2C bus. Interrupt the I2C bus to reduce the load and check again if the CPU puts I2C data on the I2C bus. If the problem seems to be in the deflection circuits, it may also be caused by randomly interrupted antenna signals.

5.5.4 The TV set turns ON and OFF randomly when you attempt to turn ON the TV set.

- The chassis power supply of the horizontal deflection part of the circuit has loose or bad (corroded) connections, resulting in irregular power supply.

- Check also if the power supply to the CPU is not interrupted randomly. If the supply voltage is not available or not normal, change Q602 and Q603.

5.5.5 The TV set is turned ON (indicator light is ON) but no picture and sound is observed.

- Measure the collector voltage of Q303 for 140 V to eliminate the possibility that the horizontal deflection circuit is causing the problem. During normal operation, the collector voltage should be in the range of 110 V.
- Next, measure the horizontal pulse output voltage at Pin11 of the digital board output terminal. In normal operation, the voltage is in the range of $2.8 V_{AC}$. If this is the case, check if the horizontal output transistors Q301 and Q302 are switching normally between their ON and OFF states.

5.5.6 The TV displays a blue screen when it is turned ON.

The TV set is equipped with a video noise-reduction circuit. Therefore, when no video and synchronization signal is detected, the CPU decodes it as "no signal detected". Check the antenna signal, the tuner and the IF amplifier circuit. Replace the Ultimate One Chip of the third generation (UOCIII) and the peripheral components of the IF circuit, if needed.

5.5.7 Horizontal Deflection Transistor is Defect.

Analysis and repair action: if the deflection time is decreased too much, this may result in an over-voltage in the deflection circuit and a defective horizontal transistor. In this case, check C303, C304 and C317 for defects.

5.5.8 In the picture appears a horizontal bright line.

- Check the vertical deflection loop for poor contact.
- Check the vertical IC power supply for +15 V and -15 V.
 - If no voltage is present, check R331 for open circuit.
 - If the voltage is low, change the vertical deflection IC.
 - If the problem still exists, change the surrounding components in the circuit (eg. C325, C326 etc.).

5.5.9 Poor picture and sound quality.

- Check if the signal line contact is good.
- Next, use a conductor to touch the IF input of the tuner, if no effect is observed, the problem is suspected to be in the IF amplification circuit.
- Use a 0.01 μ F capacitance to short the input and output terminals of SAW101 to isolate if the SAW filter is faulty. If the picture and sound condition does not improve, check the AGC circuitry, and replace resistors and capacitors when needed.

5.5.10 The colour disappears after the TV is turned ON for a while.

- Check if the colour system is selected correctly.
- If you suspect the 24.576 MHz crystal, replace it.
- If there is no effect, then replace suspected components in the decoding and colour circuitry.

5.5.11 Soft volume can still be heard, even when volume level is reduced to "0".

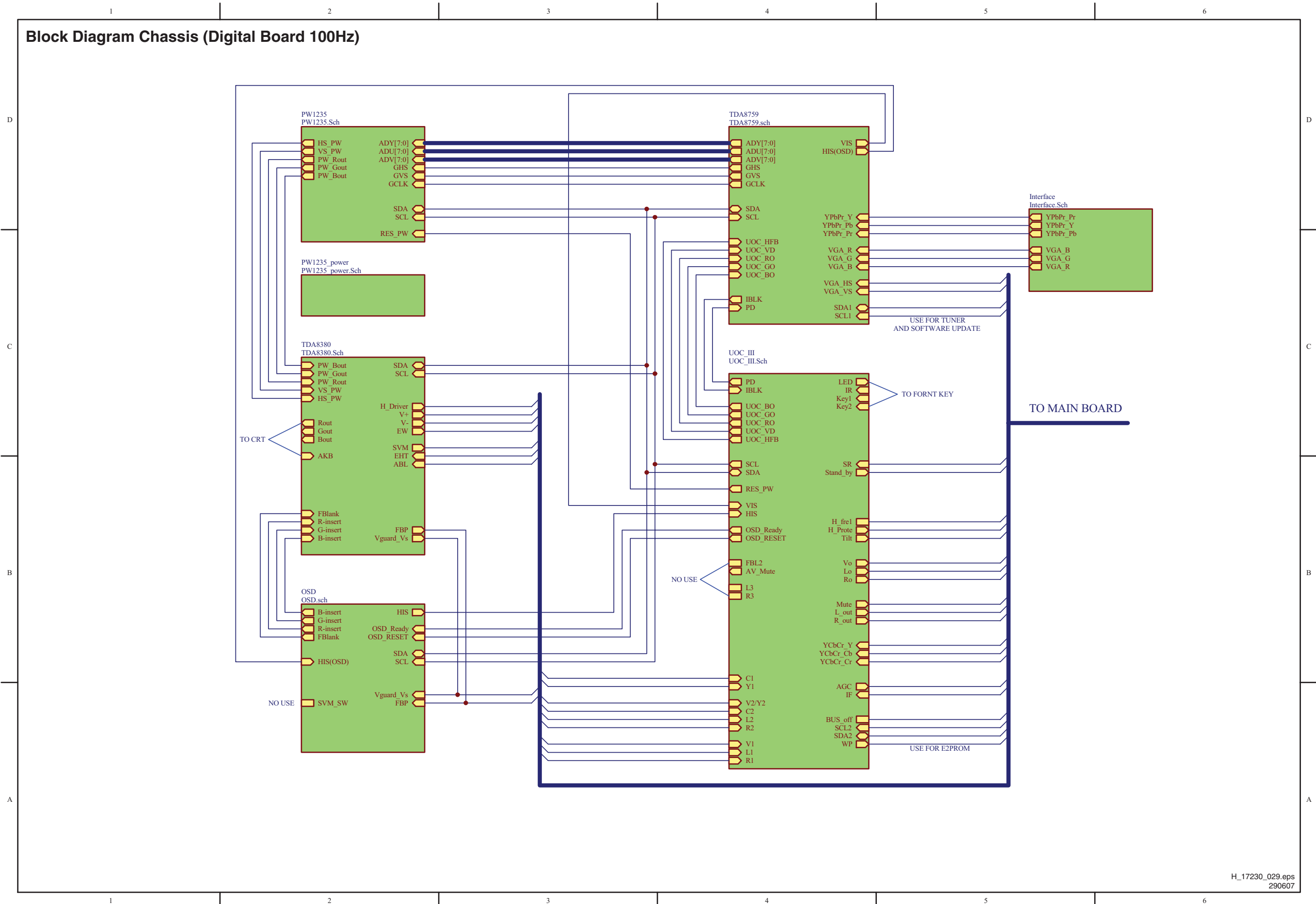
- Check if the peripheral networks connected to pin 122 (MUTE) and pin128 (AV MUTE) of UOCIII are well connected.
- Proceed to check the audio control and power amplifier module (IC401); check the surrounding components of IC401. For example check C407, if it is correctly connected and shows no leakage. Does Q401 switch normally between its saturation and cut-off states?.

5.5.12 No colour in AV state

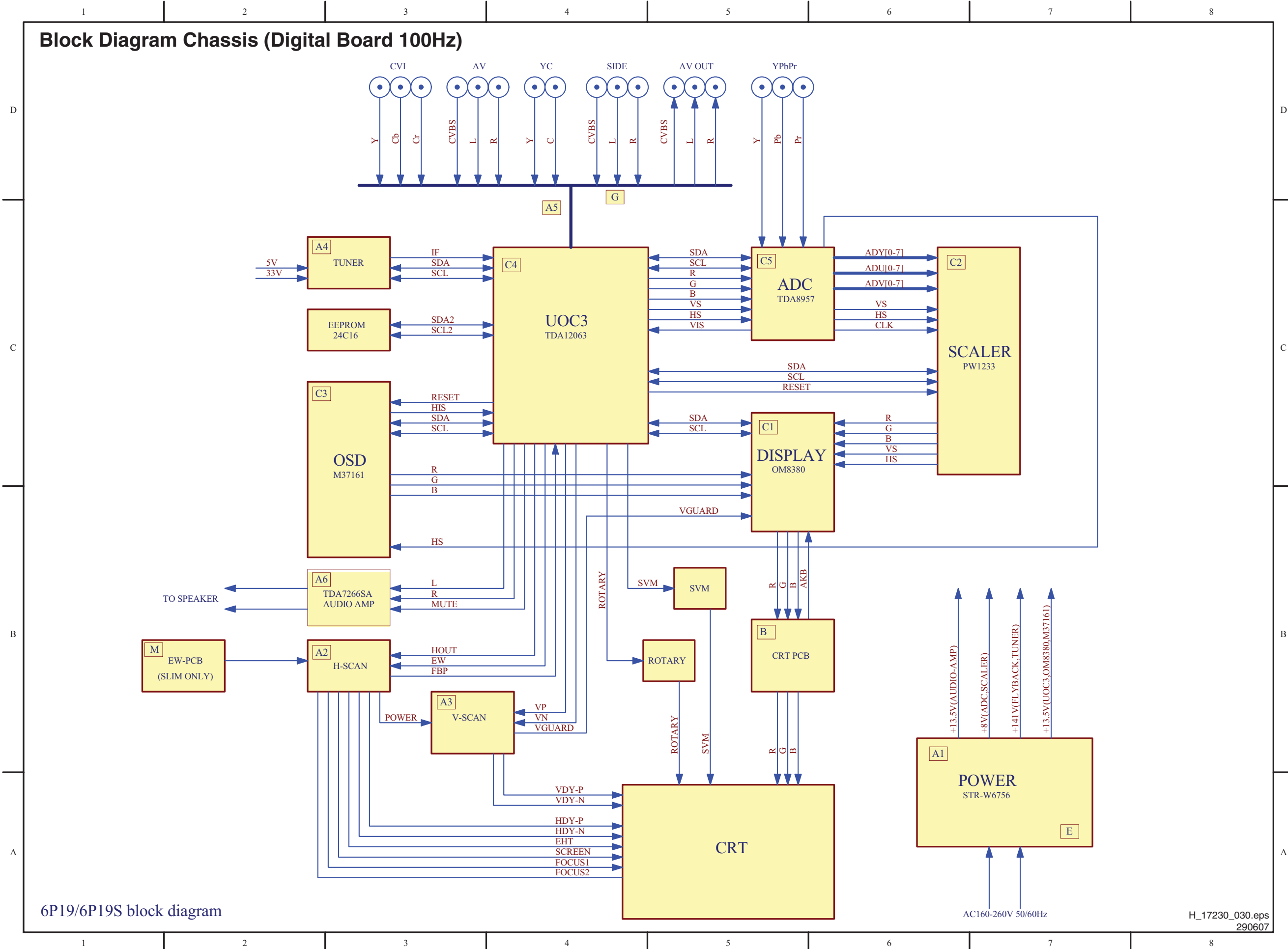
- First, check the video input module.
- Second, check the A-D module.
- Next, check the video processor module.
- Finally, check if UOCIII has a defect.

6. Block Diagrams, Test Point Overviews, and Waveforms

Block Diagram Chassis (Digital Board 100Hz)

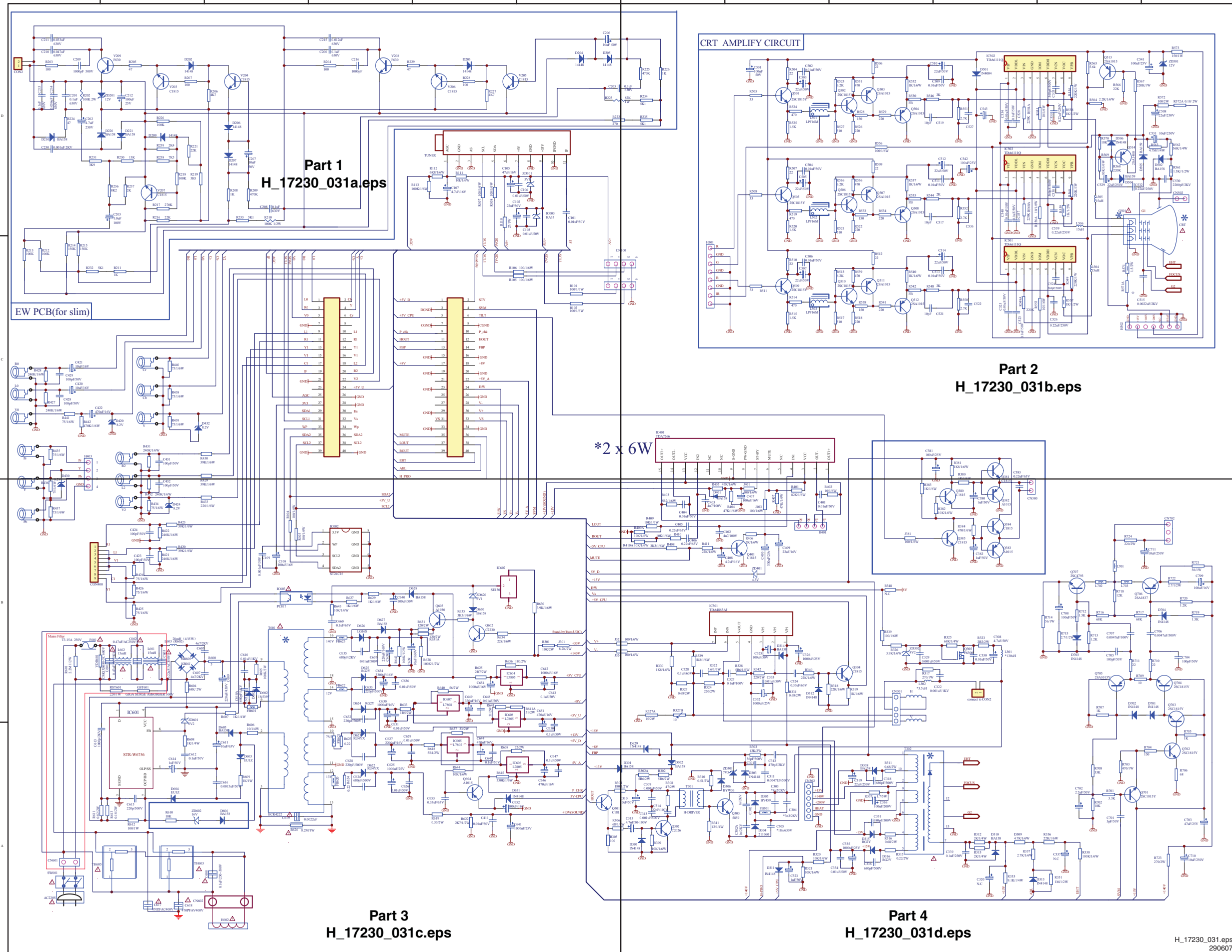


Block Diagram Chassis (Digital Board 100Hz)



6P19/6P19S block diagram

Schematic Diagram Chassis (Overview)



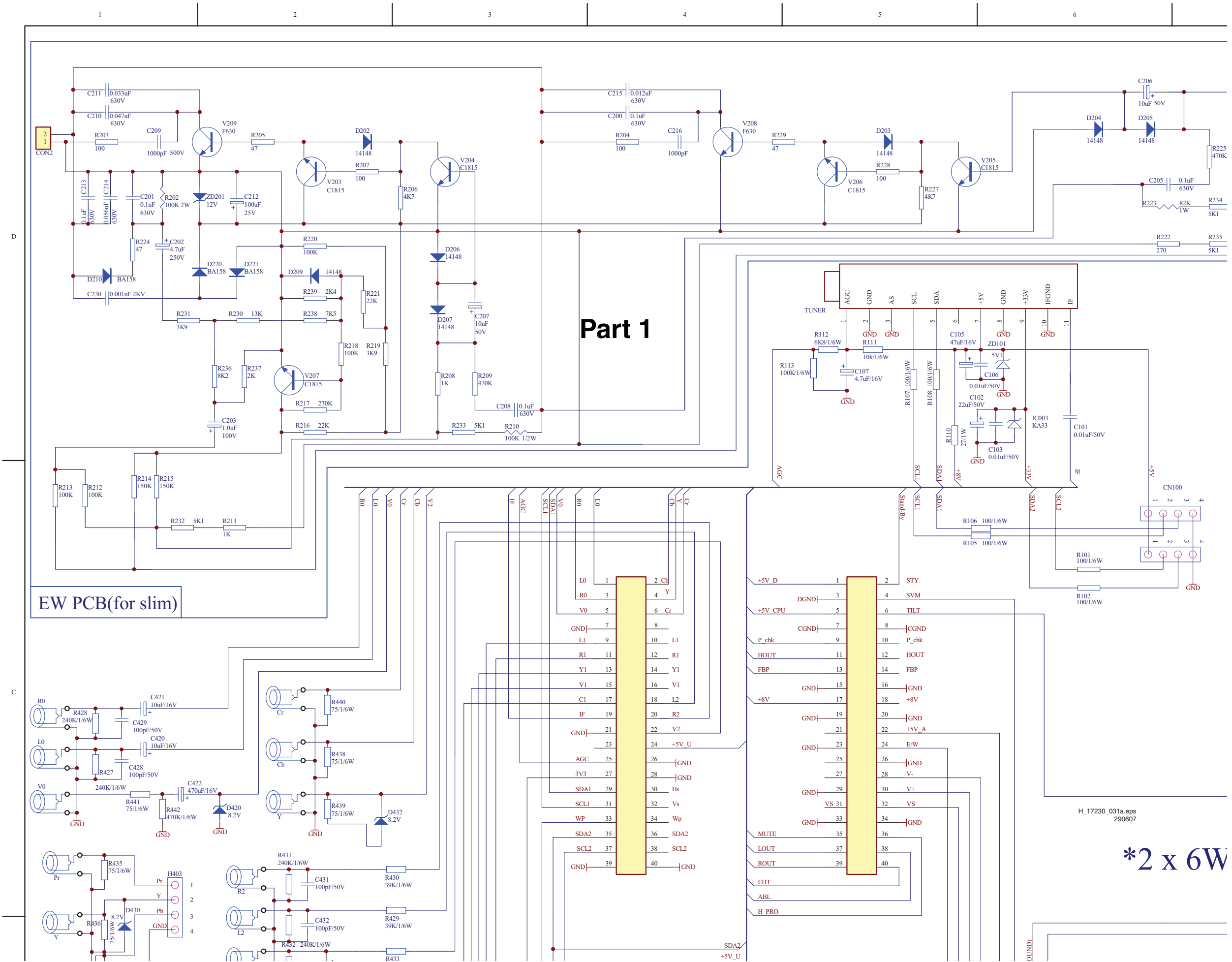
Part 1
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Part 2
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Part 3
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Part 4
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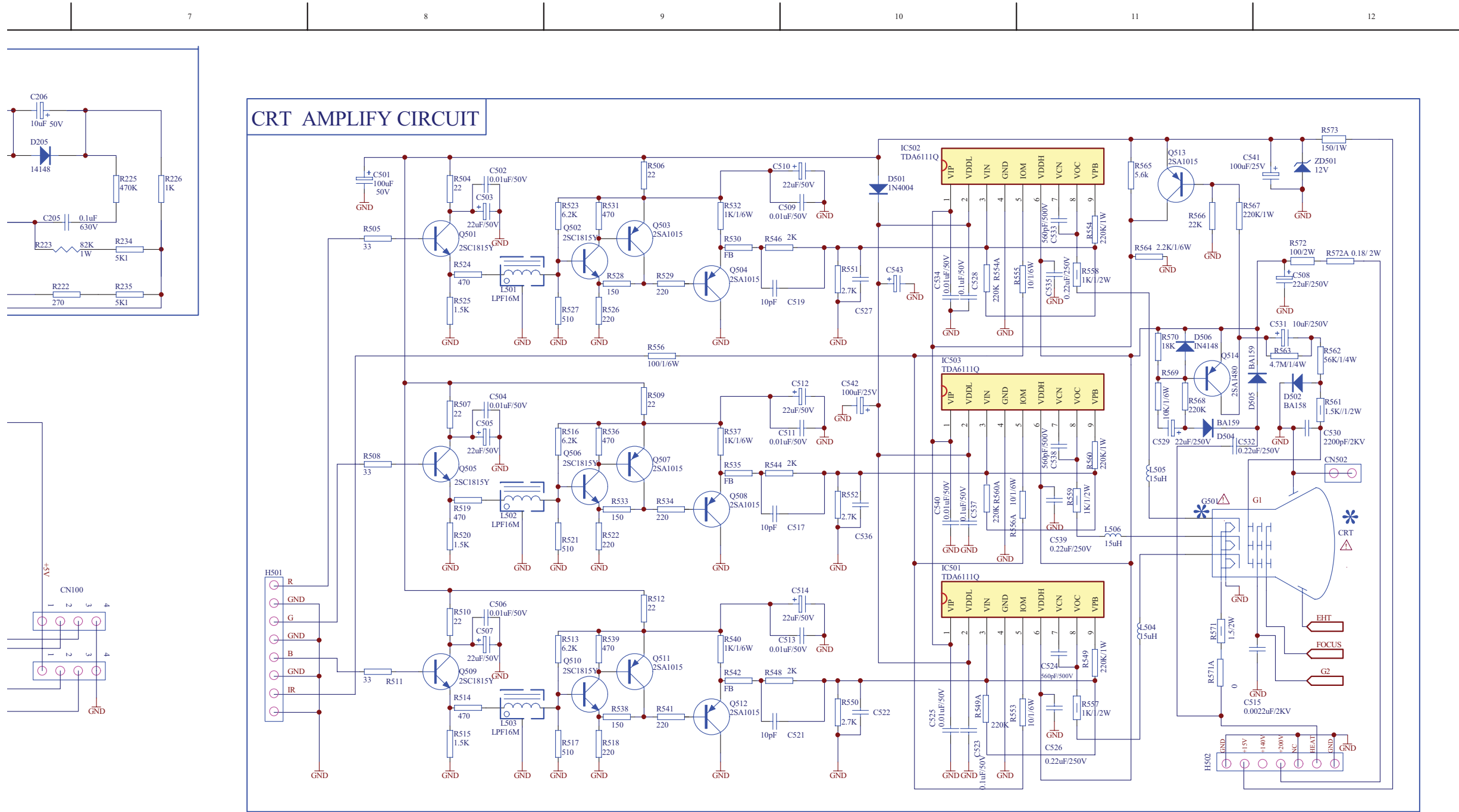
Schematic Diagram Chassis (Part 1)



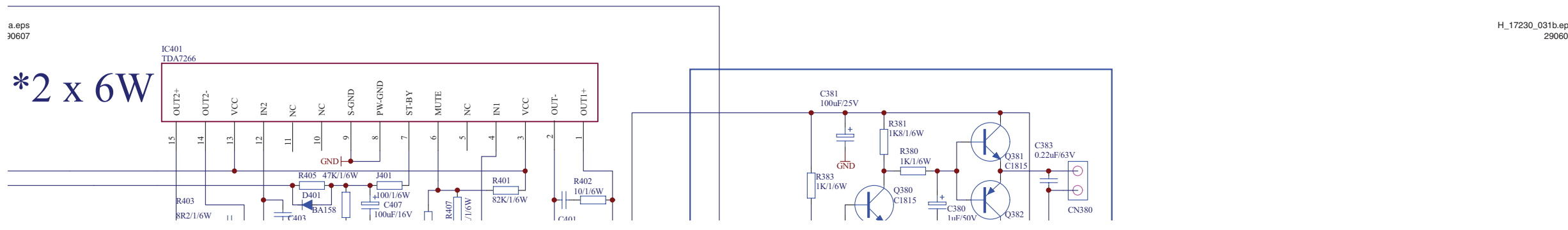
*2 x 6W

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Schematic Diagram Chassis (Part 2)



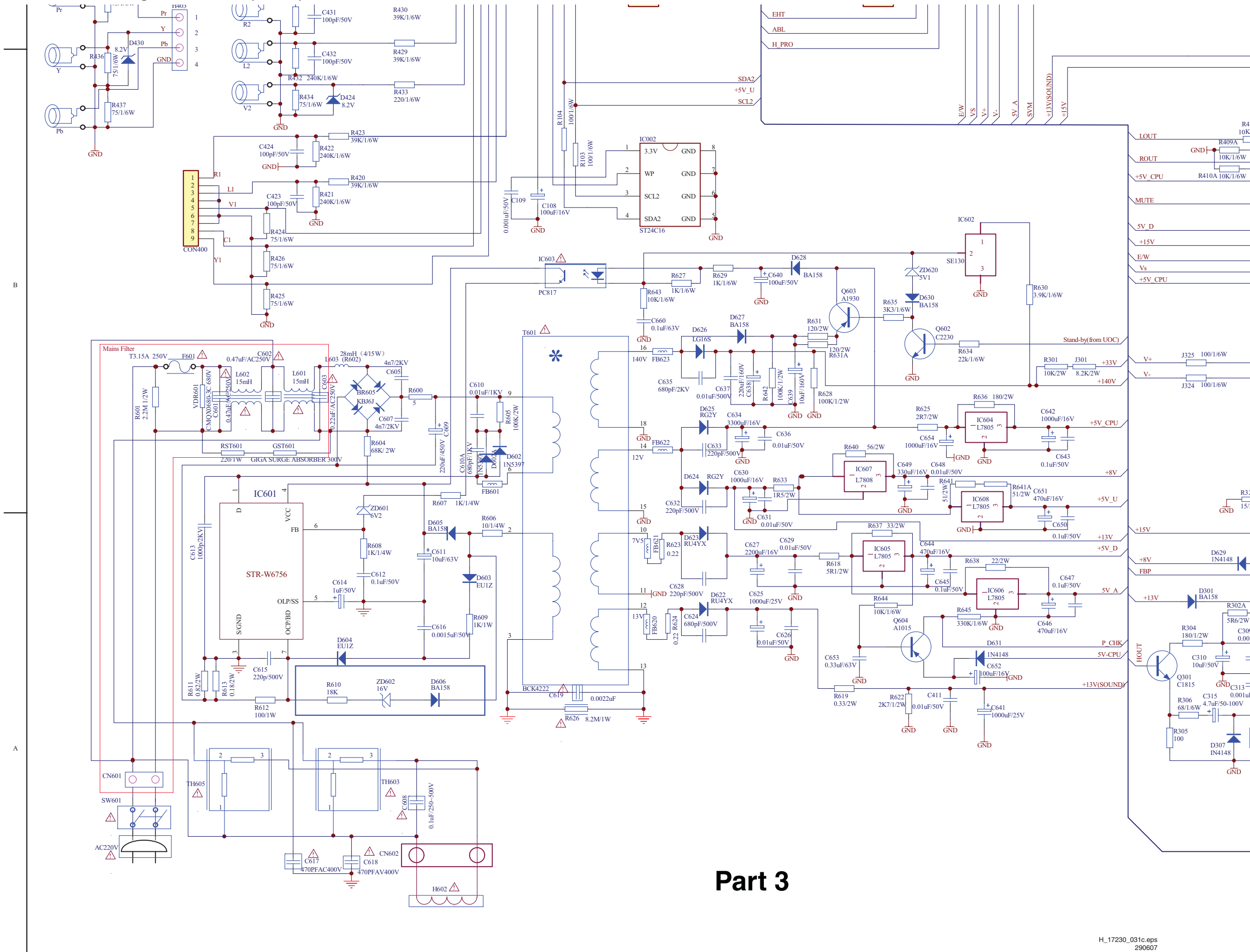
Part 2



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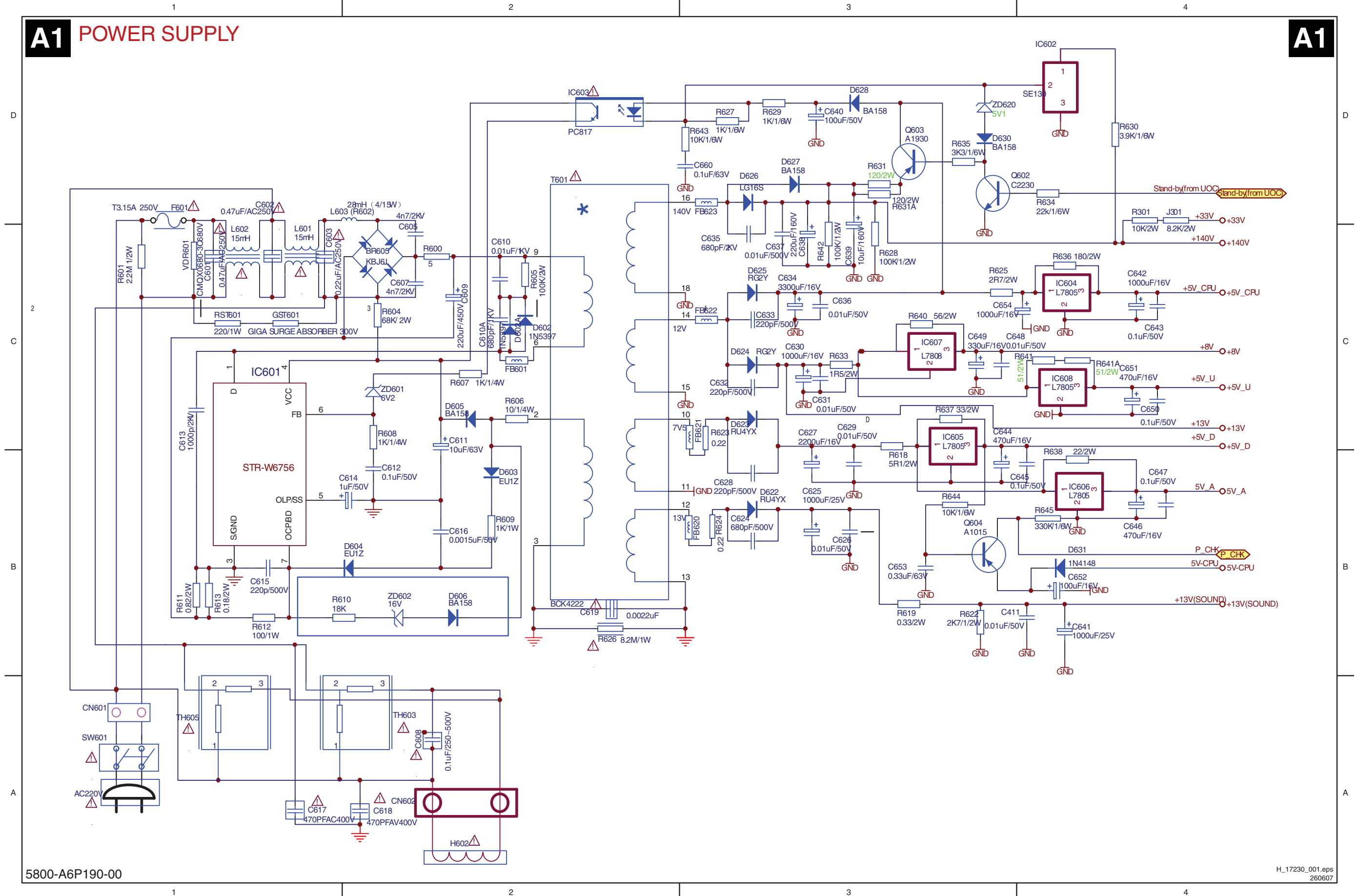
Schematic Diagram Chassis (Part 3)



Part 3

7. Circuit Diagrams and PWB Layouts

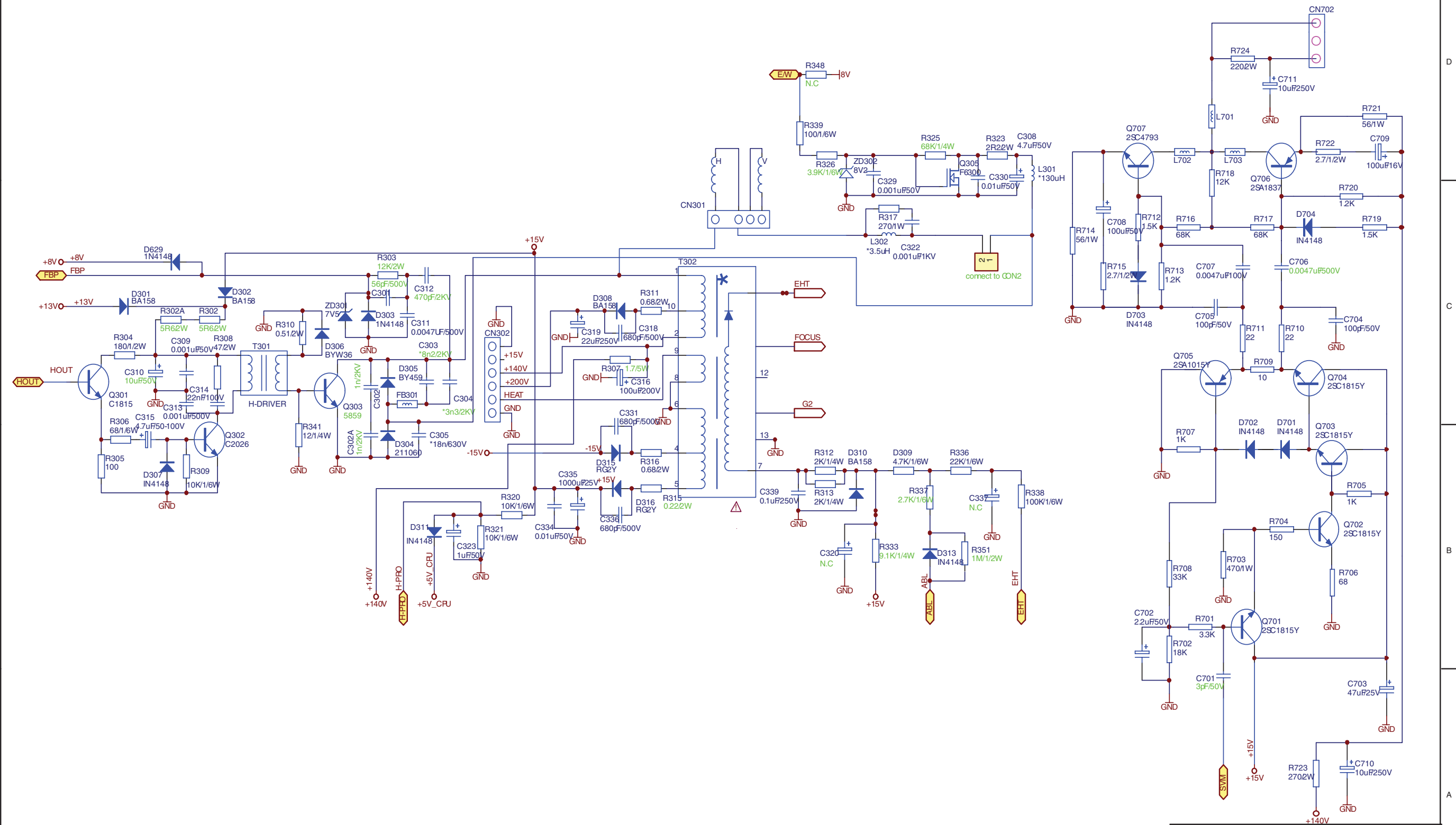
Mono Carrier: Power Supply



Mono Carrier: Line Deflection

A2 LINE DEFLECTION

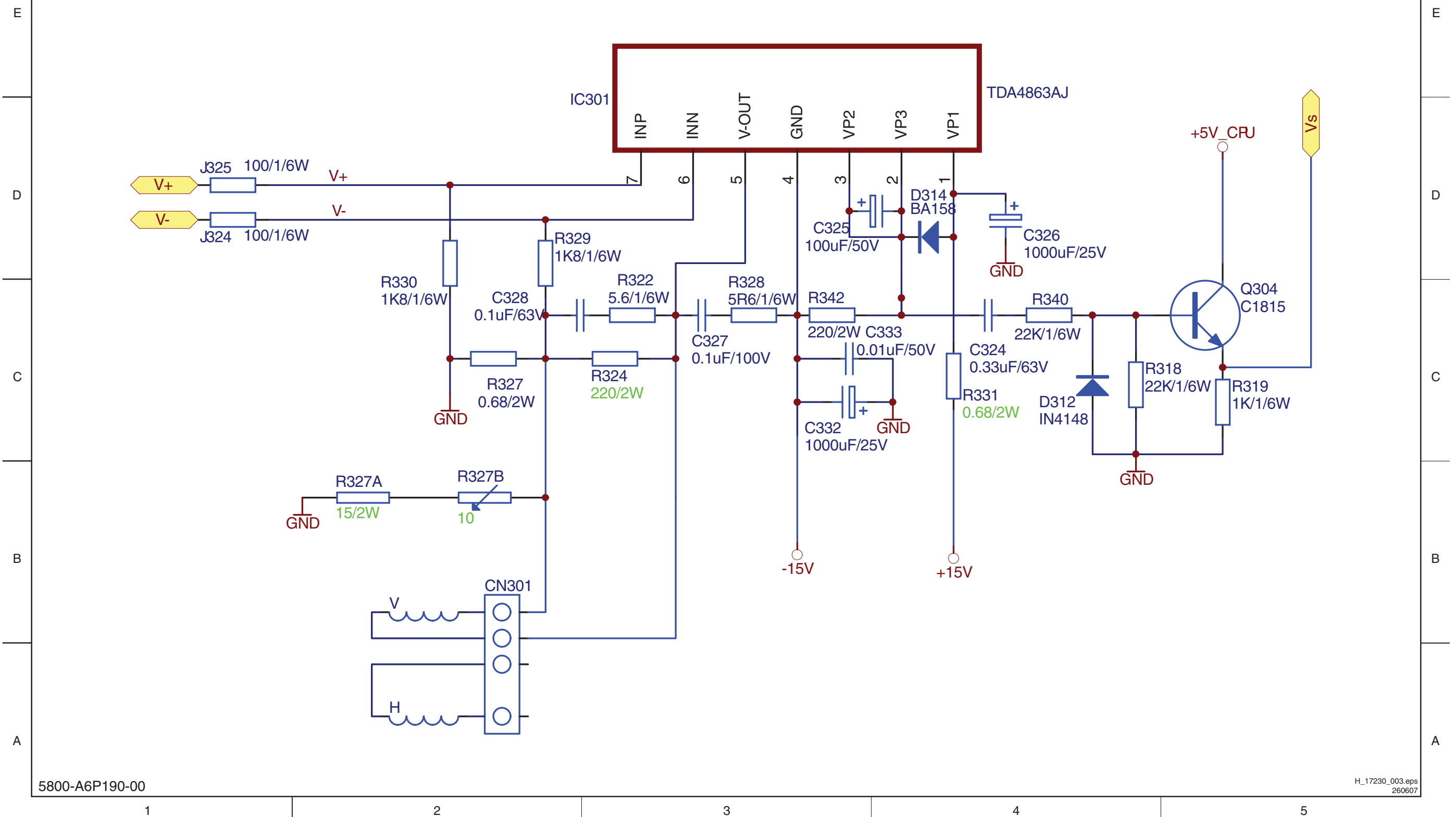
A2



Mono Carrier: Frame Deflection

A3 FRAME DEFLECTION

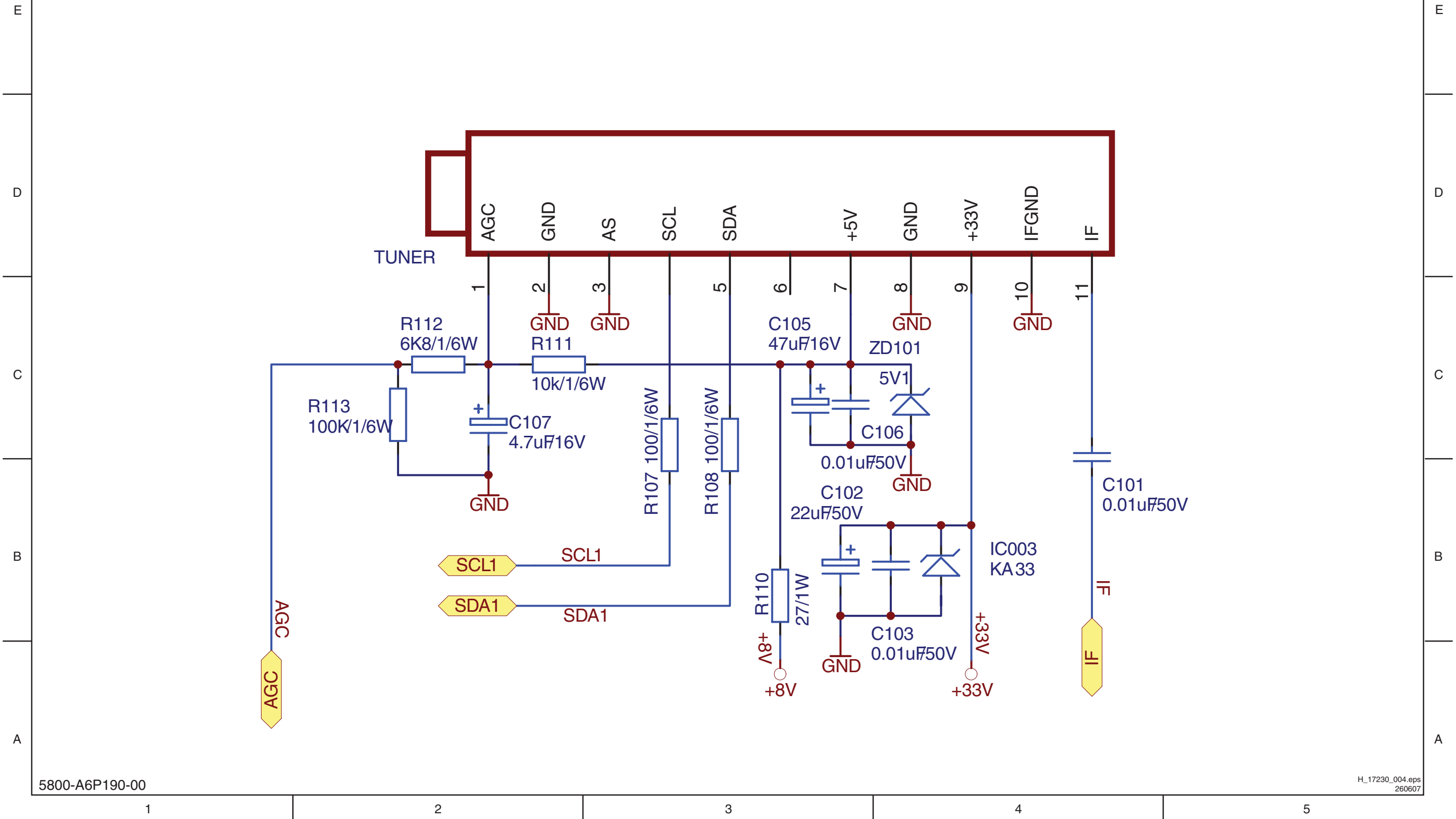
A3



Mono Carrier: Tuner IF

A4 TUNER IF

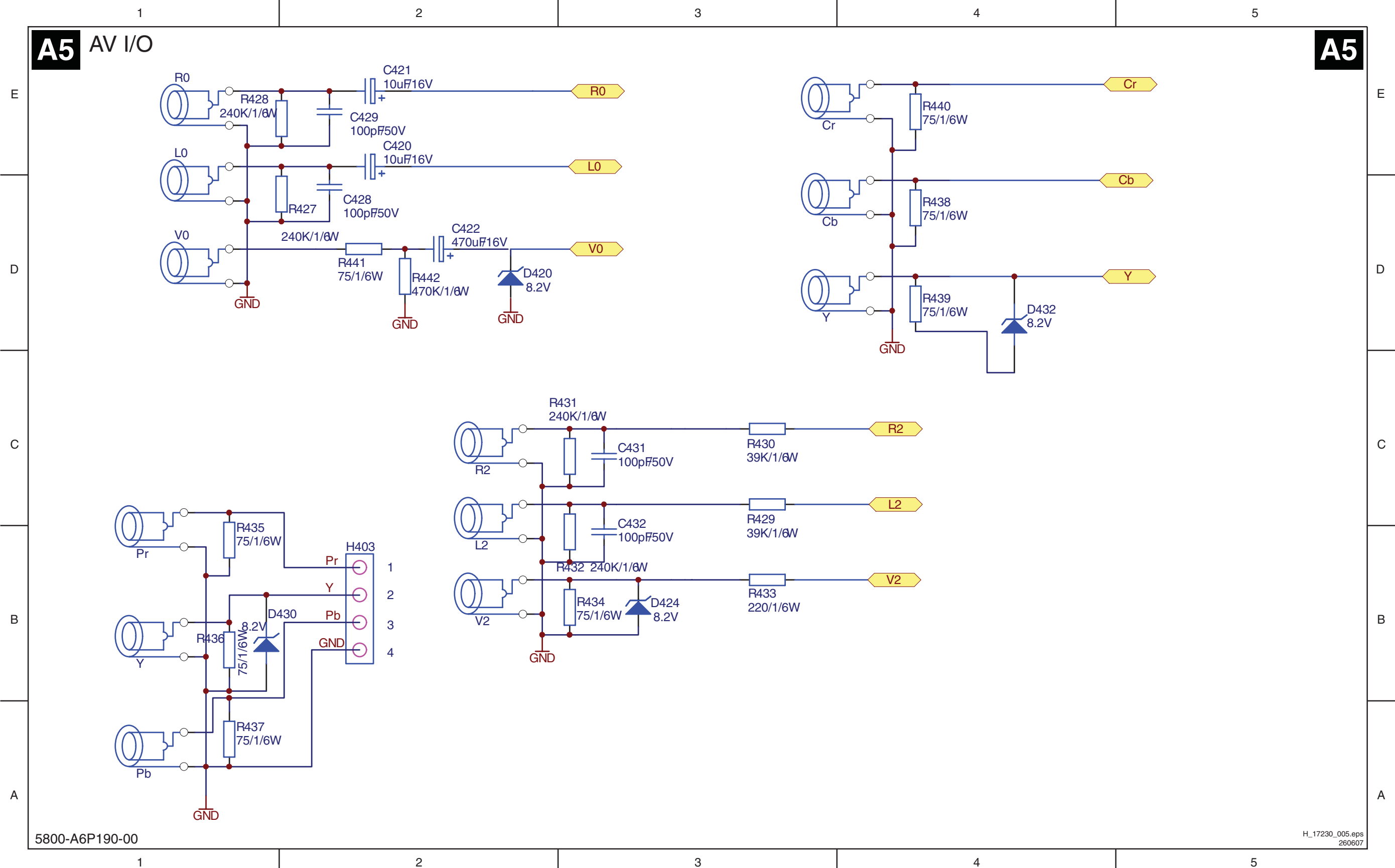
A4



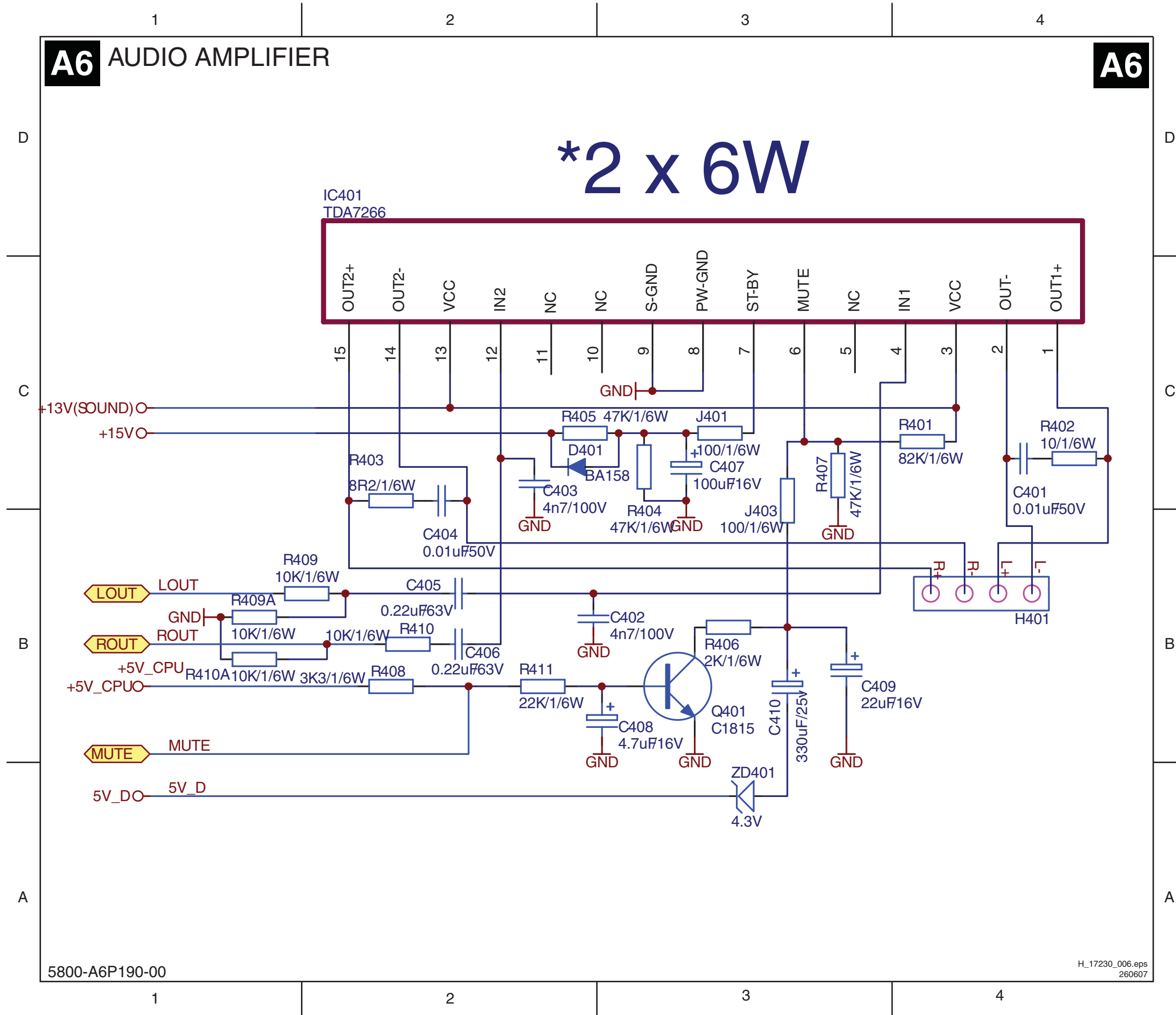
Mono Carrier: AV I/O Interface

A5 AV I/O

A5



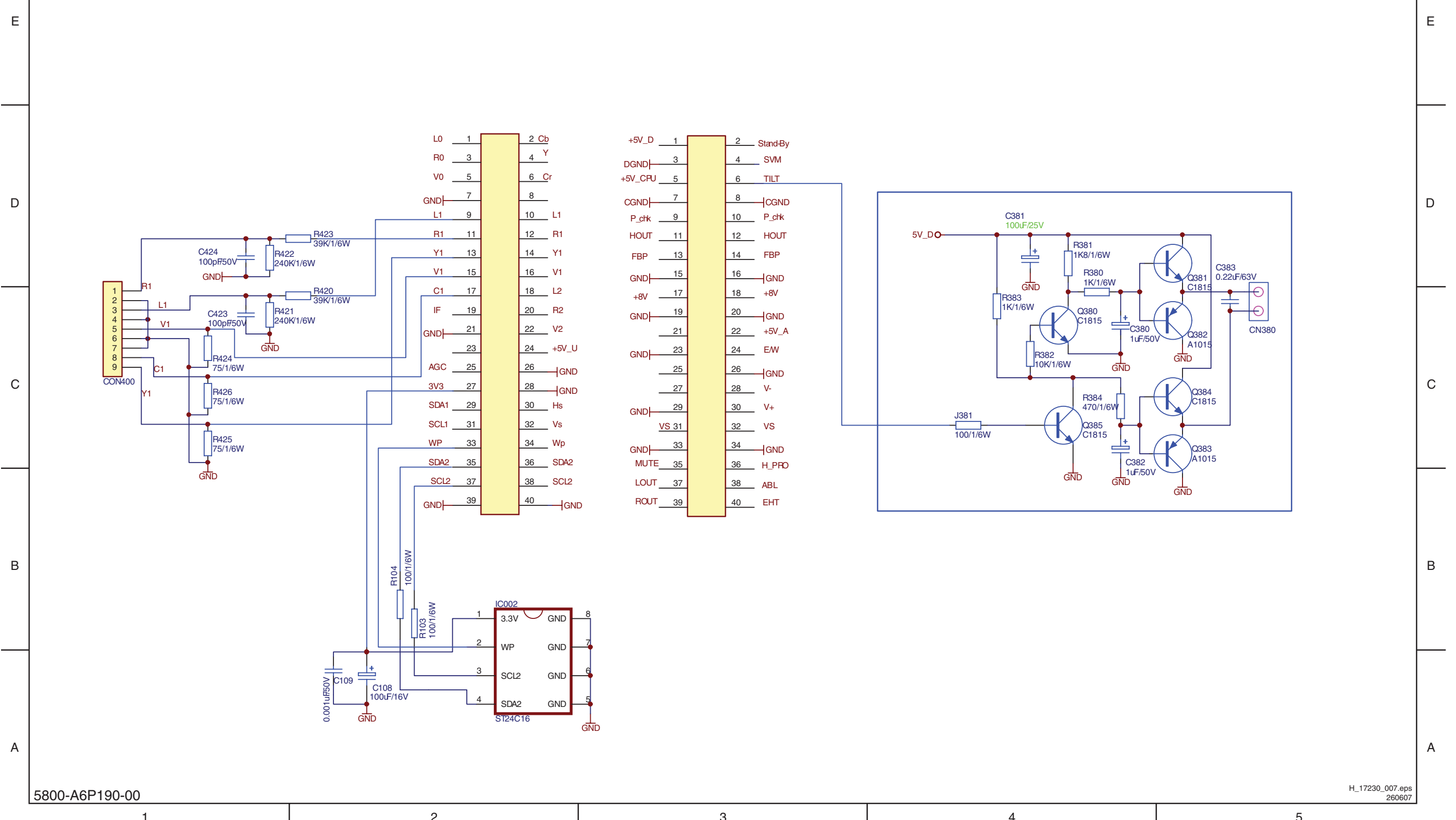
Mono Carrier: Audio Amplifier



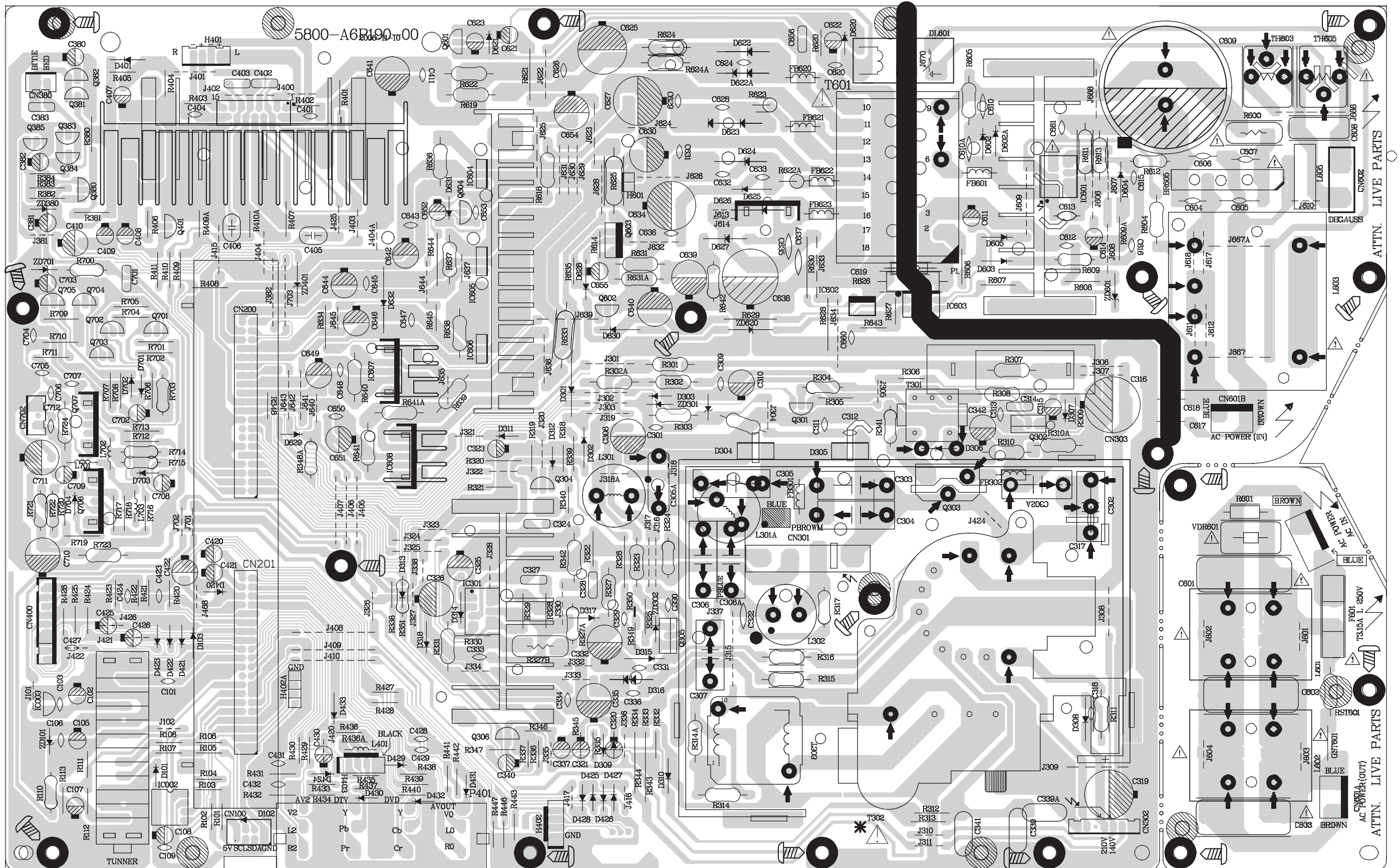
Mono Carrier: Digital Interface Circuit

A7 DIGITAL INTERFACE CIRCUIT

A7



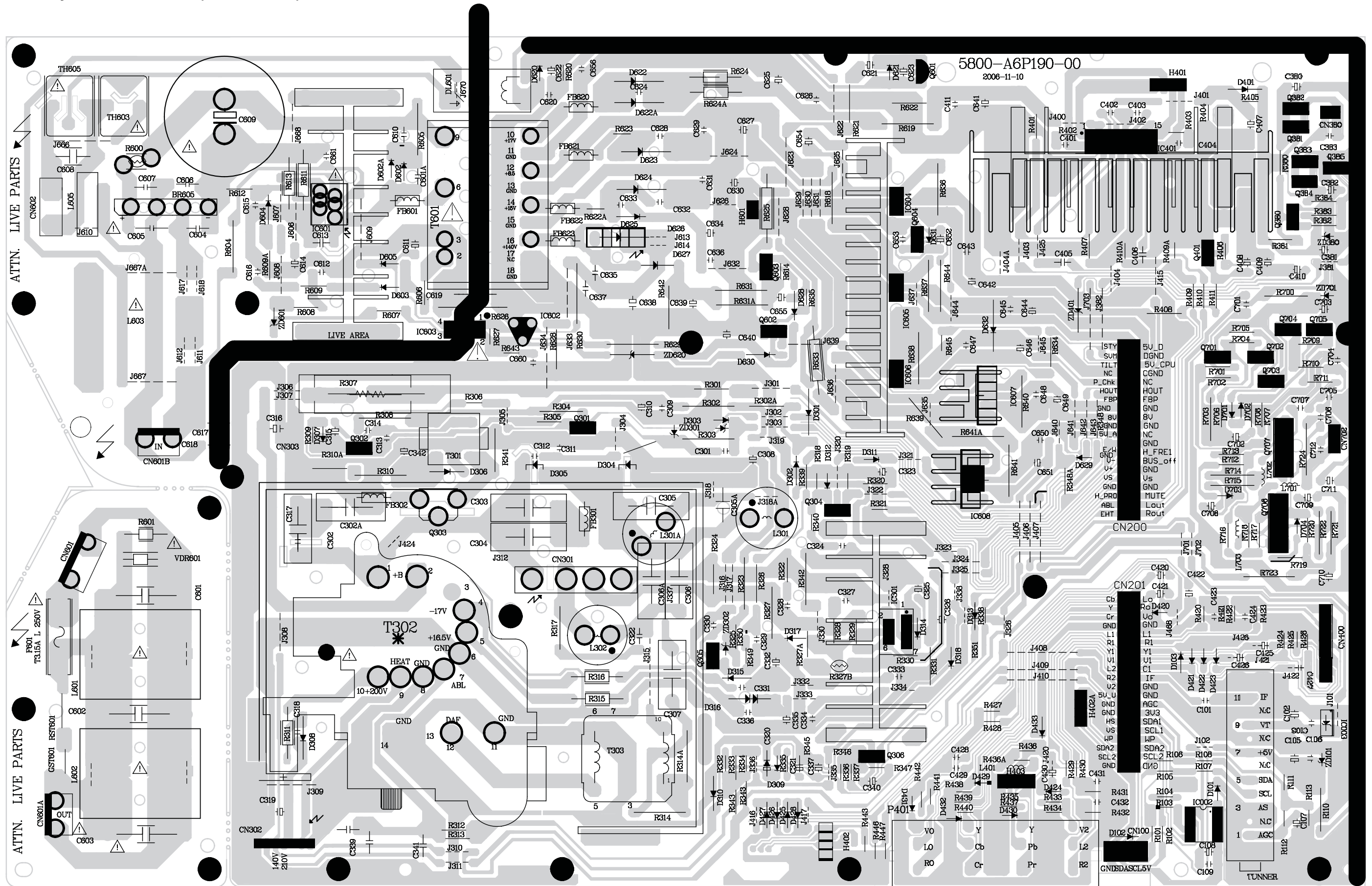
Layout Mono Carrier (Top Side)



5800-A6P190-00

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Layout Mono Carrier (Bottom Side)



5800-A6P190-00
2008-11-10

5U_D
DGND
5U_CPU
CGND
NC
P_Chk
HOUT
FBP
GND
8U
GND
NC
GND
H_FRE1
BUS_of
GND
Us
GND
H_PRO
ABL
EHT

11	IF	C102
	NC	
9	VT	C103
	NC	
7	+5V	C105
	NC	
5	SDA	C107
	NC	
3	AS	C108
	NC	
1	ACC	C109

CRT Amplifier Panel

B CRT BOARD

B

A

A

B

B

C

C

D

D

E

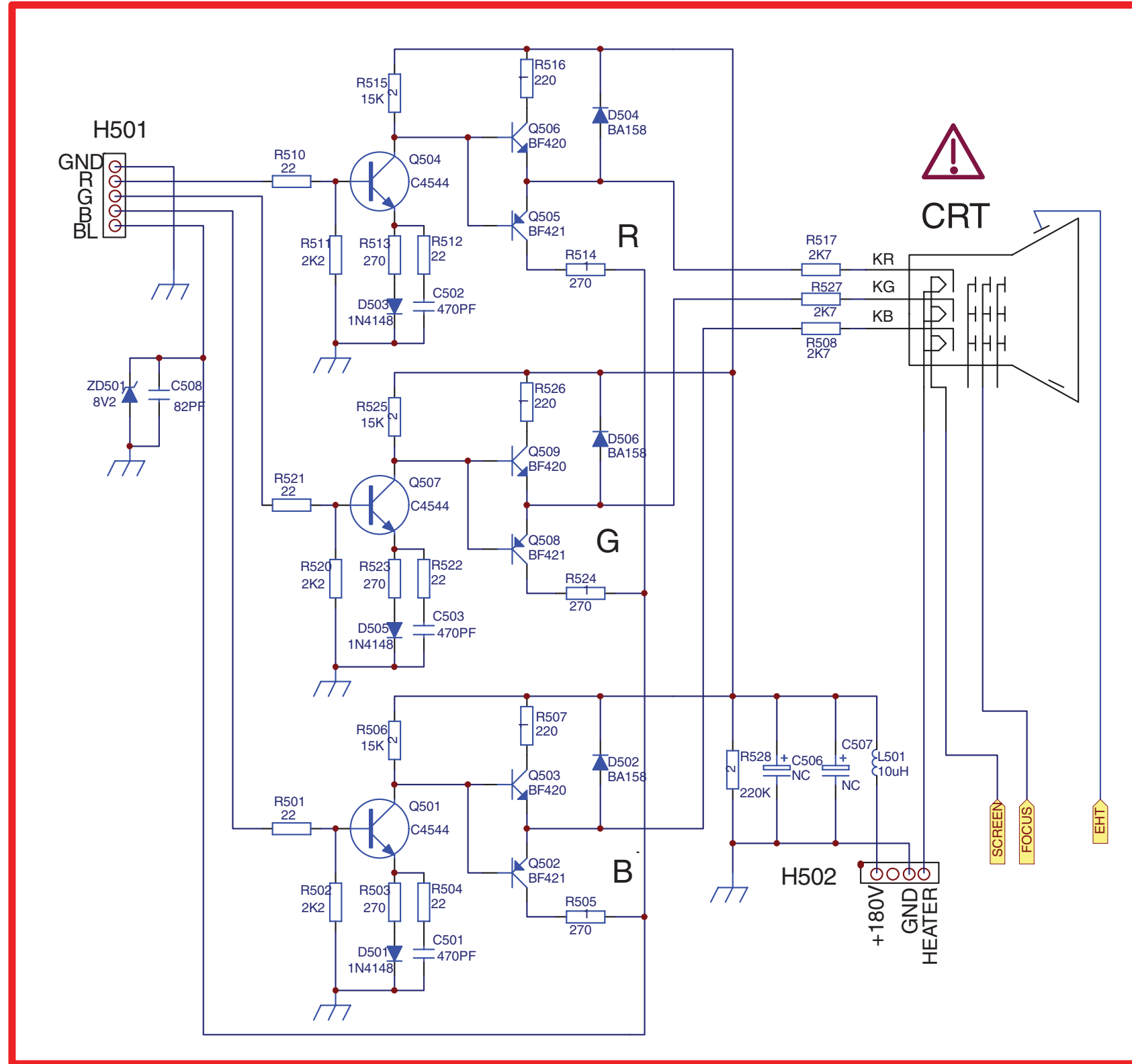
E

F

F

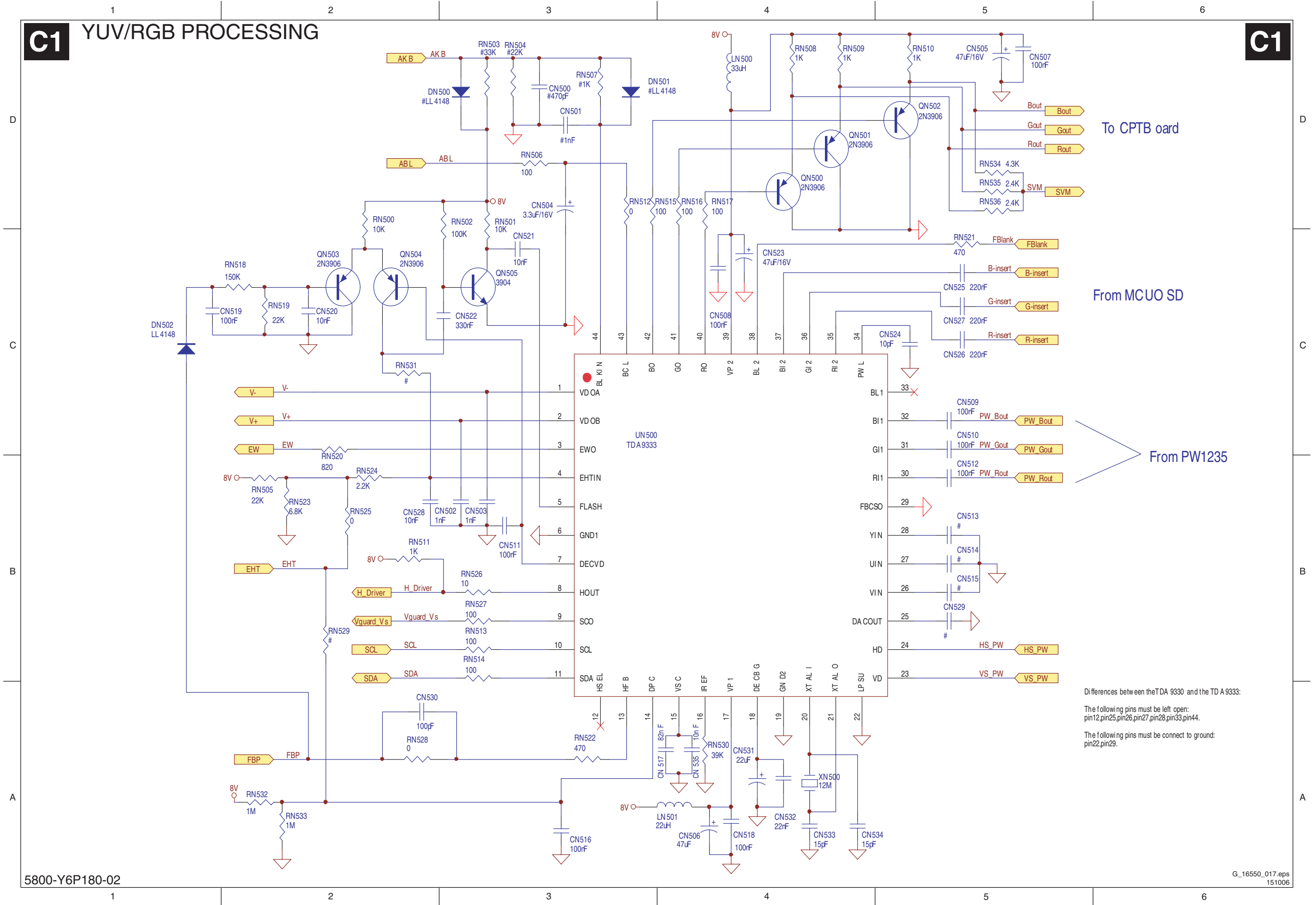
G

G



Digital Board: YUV/RGB Processing Panel

C1 YUV/RGB PROCESSING

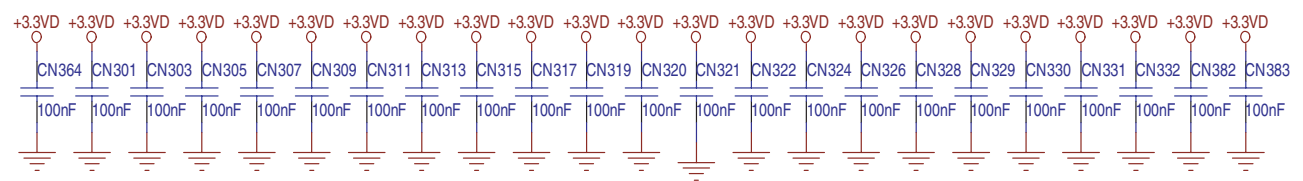
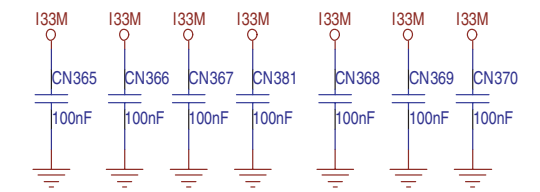
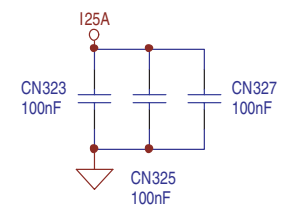
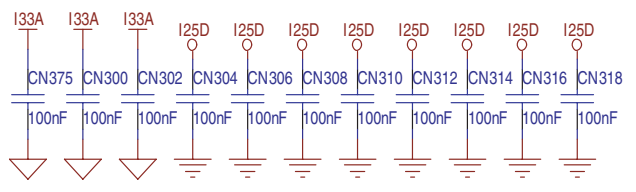
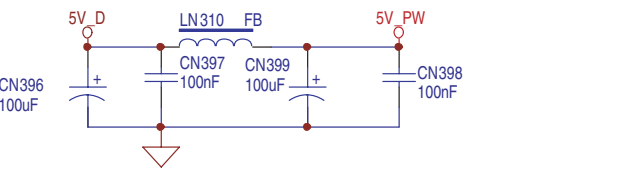
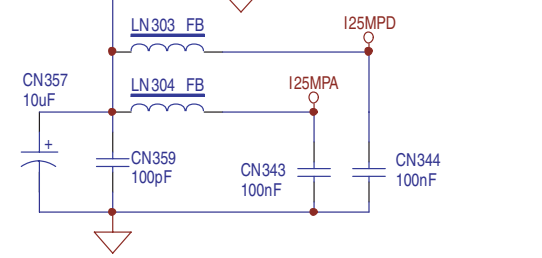
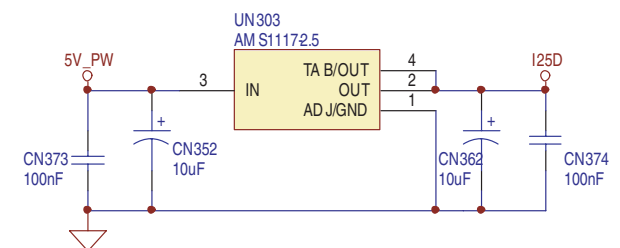
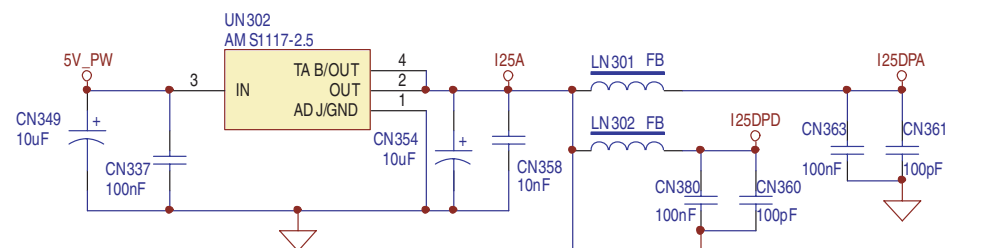
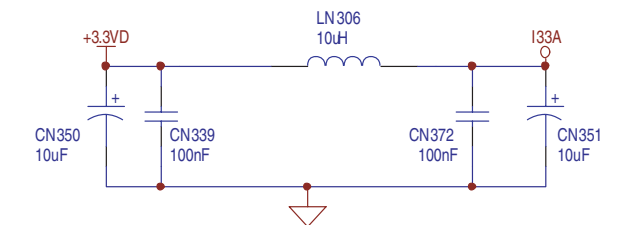
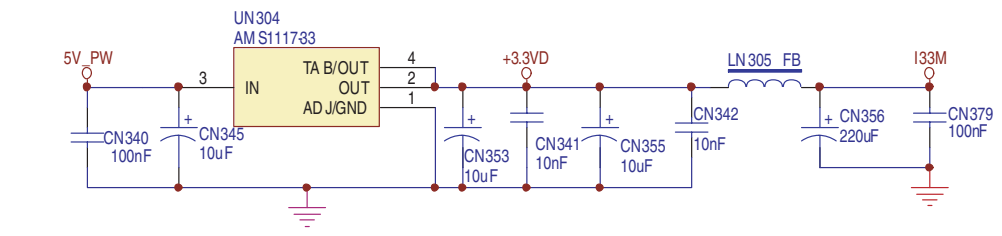
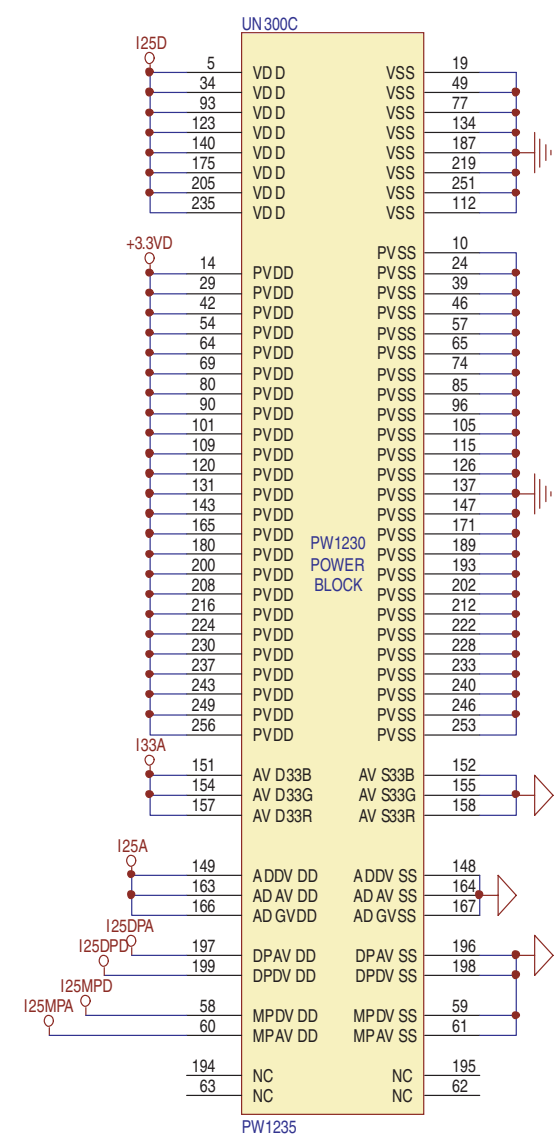


Differences between the TDA 9330 and the TDA 9333:
 The following pins must be left open:
 pin12, pin25, pin26, pin27, pin28, pin33, pin44.
 The following pins must be connect to ground:
 pin22, pin29.

Digital Board: Video Processing

C2 VIDEO PROCESSING

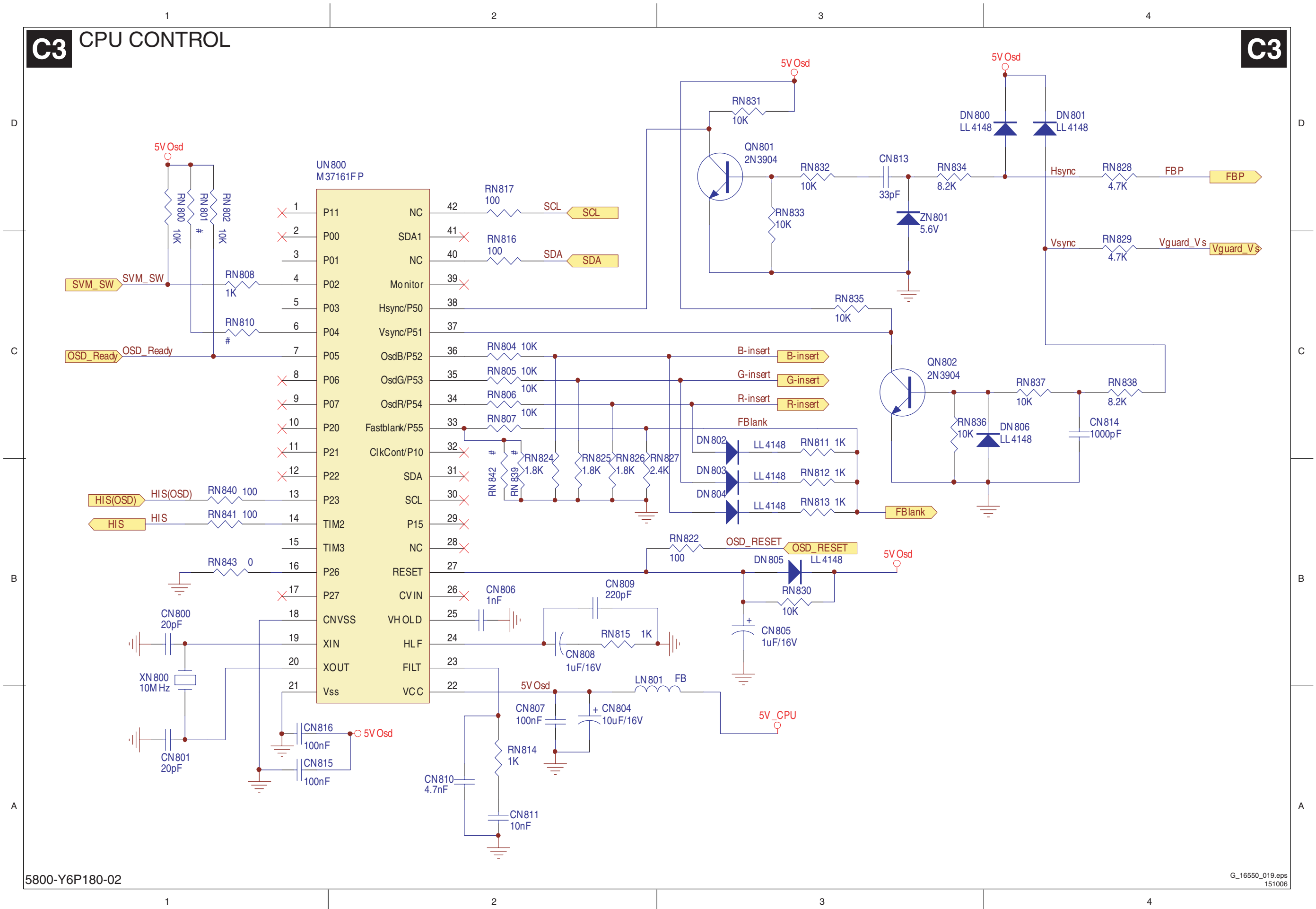
C2



Digital Board: CPU Control

C3 CPU CONTROL

C3

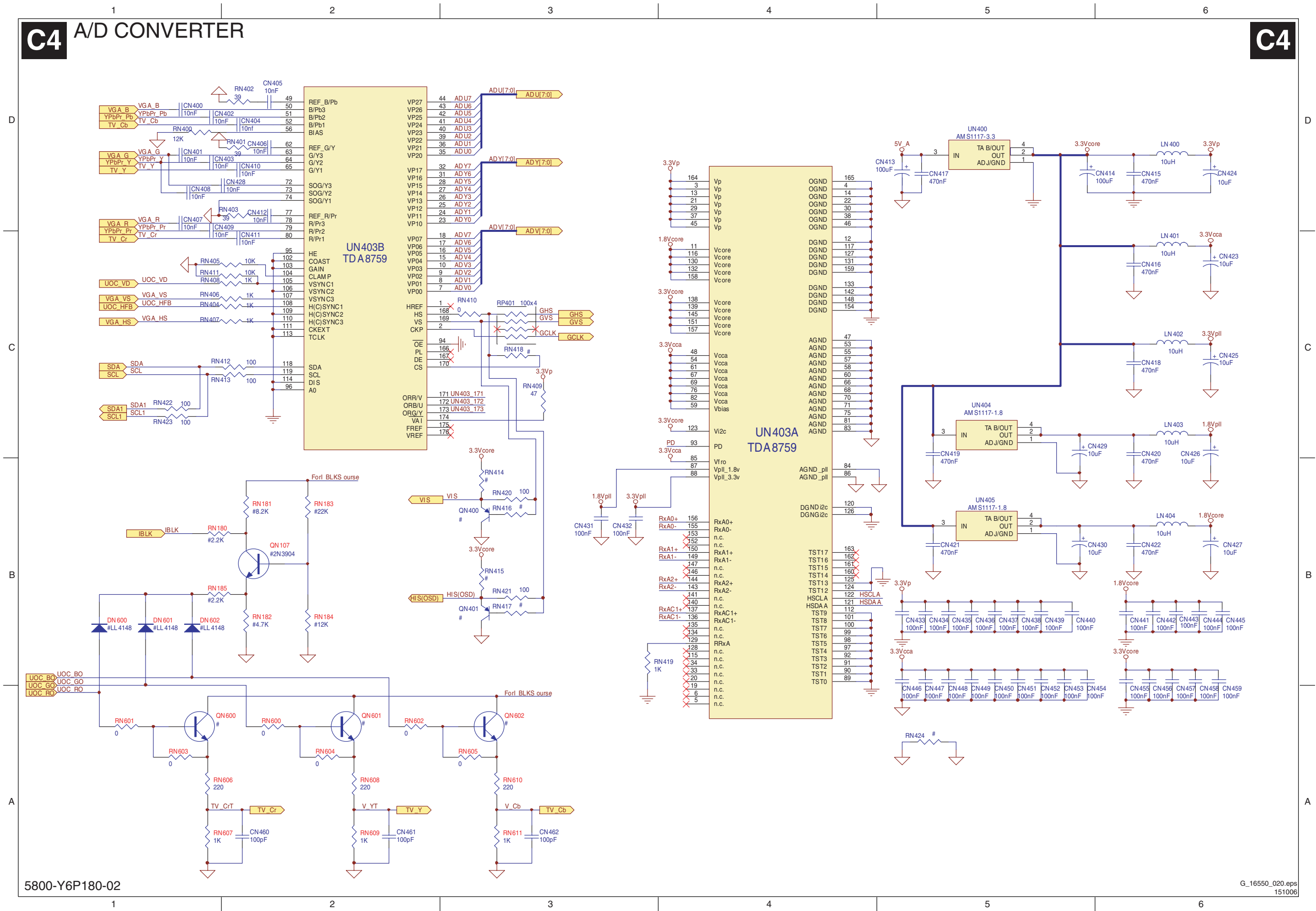


Digital Board: A/D Converter

C4

A/D CONVERTER

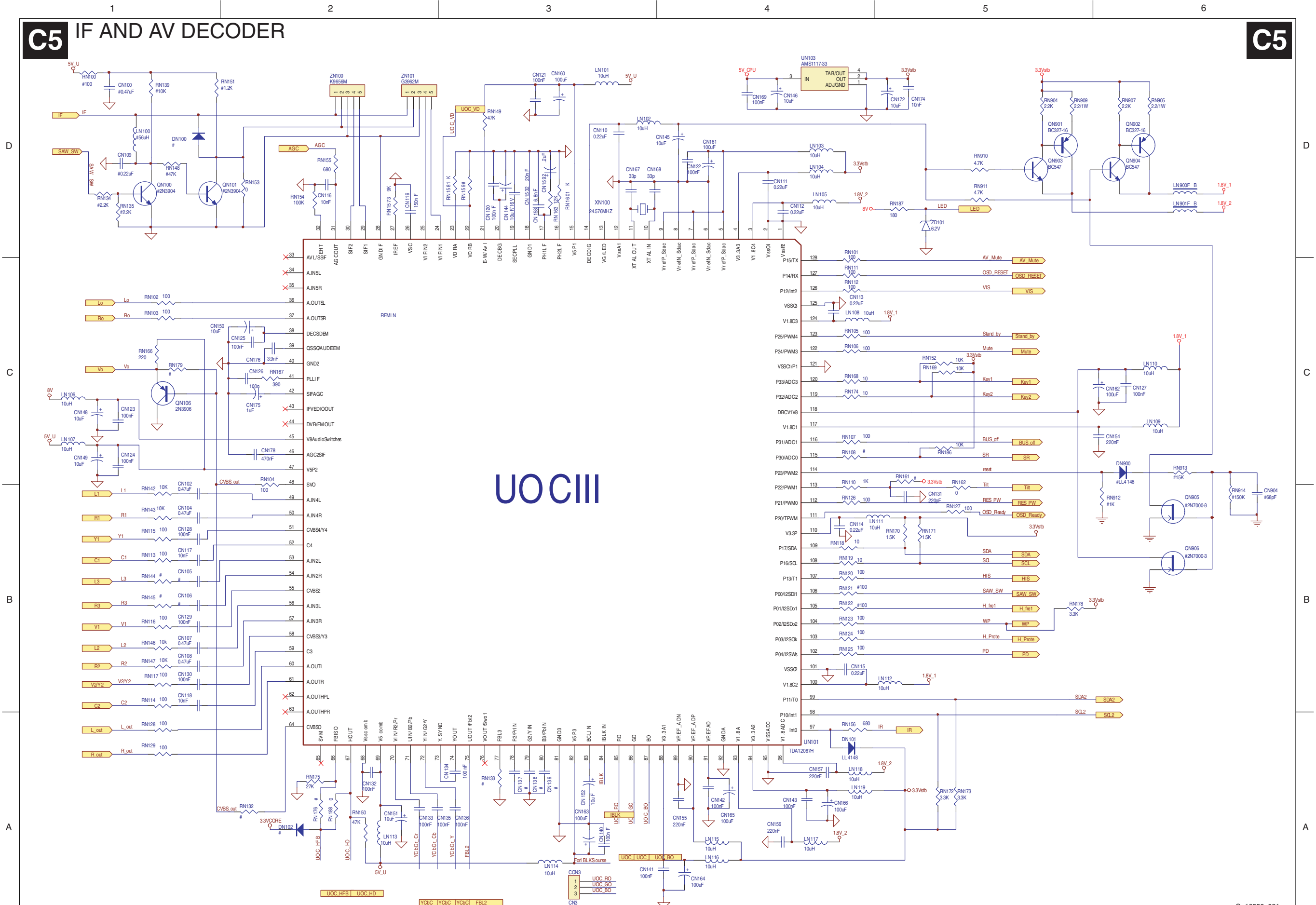
C4



Digital Board: IF and AV Decoder

C5 IF AND AV DECODER

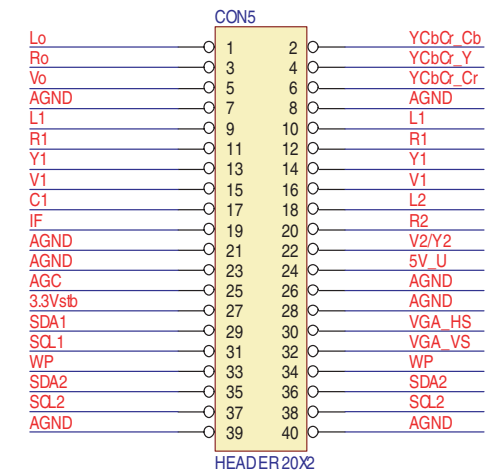
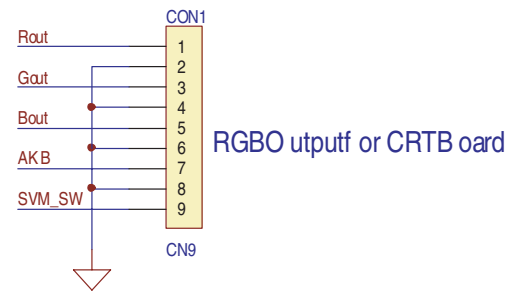
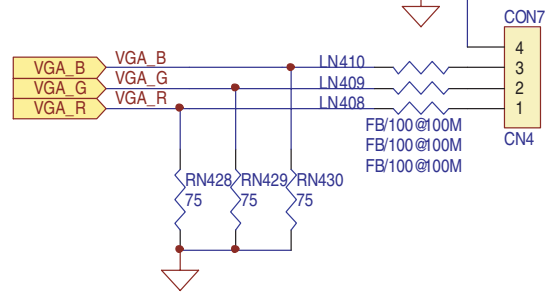
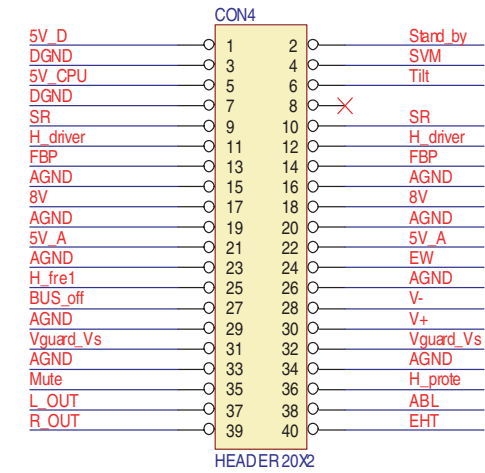
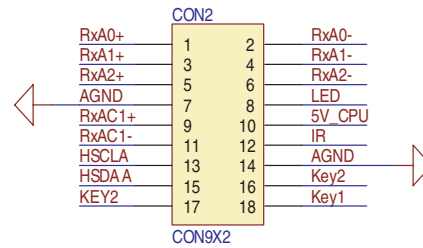
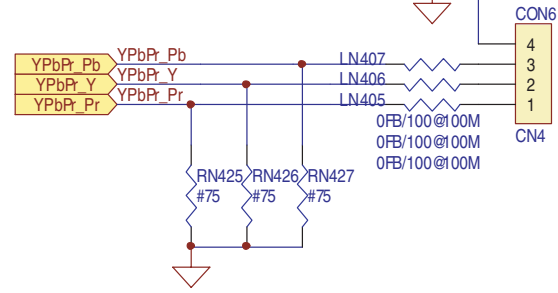
C5



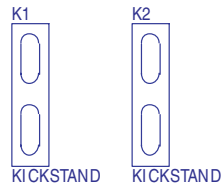
Digital Board: Interface

C6 INTERFACE

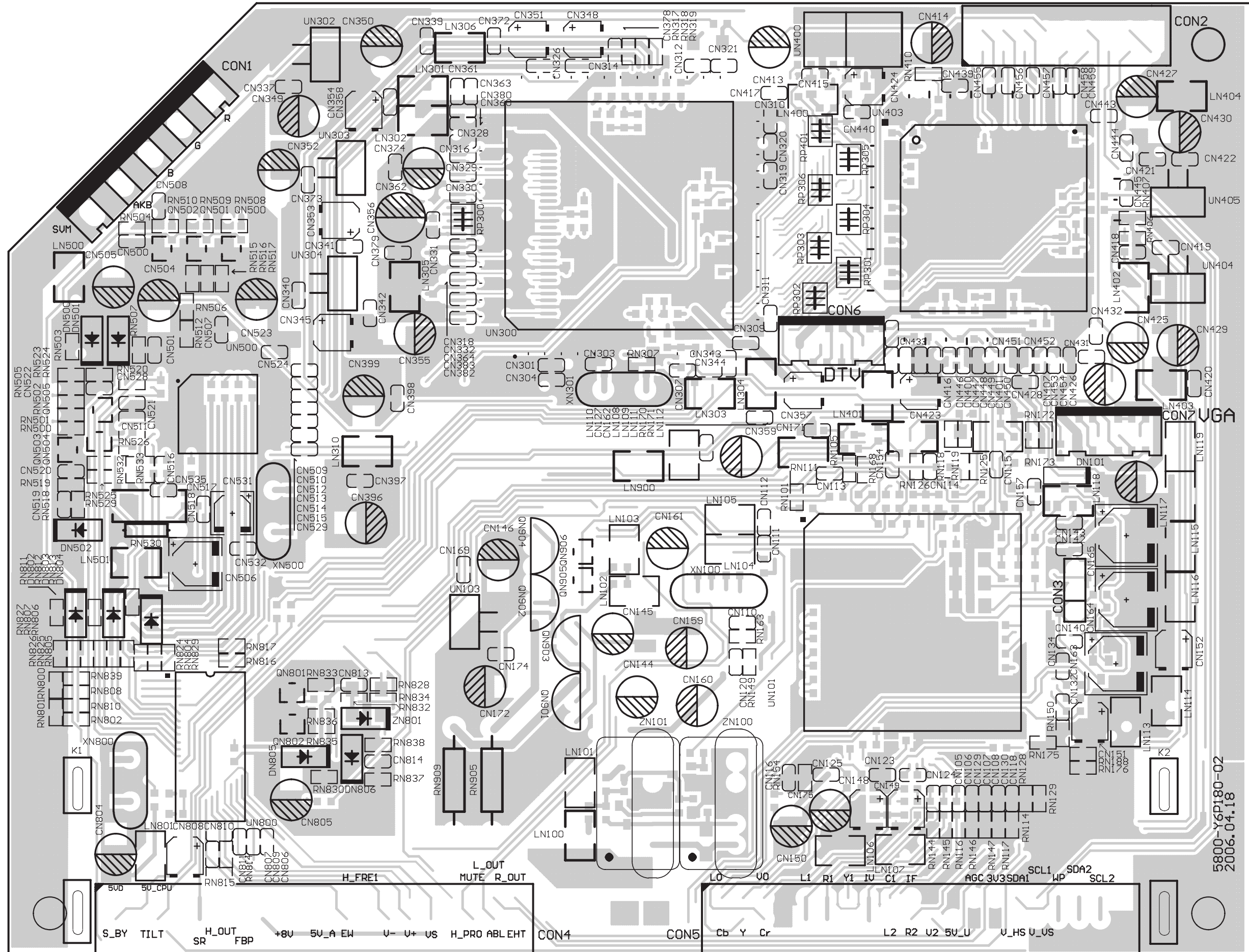
C6



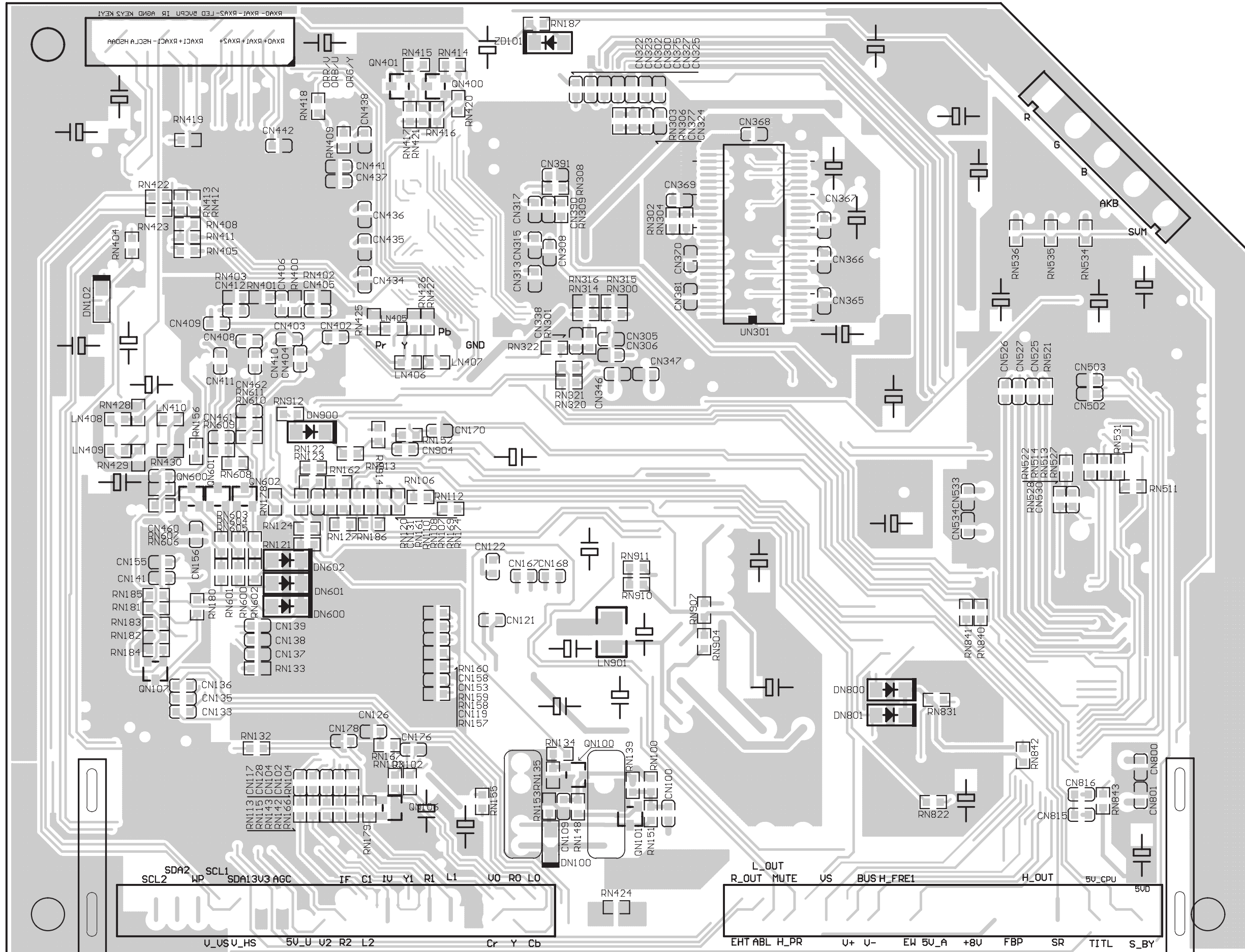
Connect to Main Board Ports



Layout Digital Board (Top Side)



Layout Digital Board (Bottom Side)

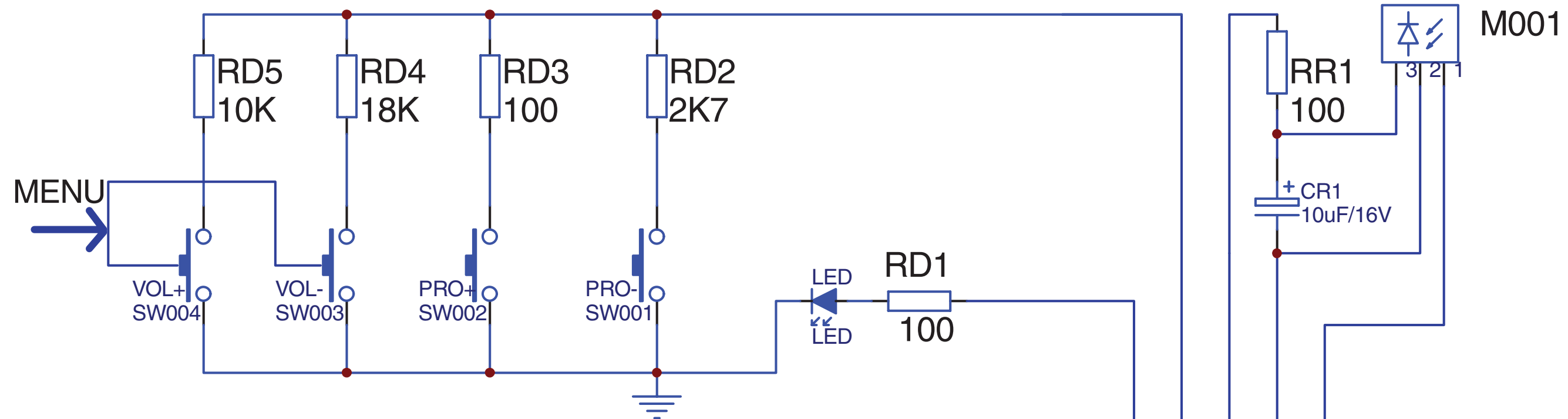


Front Control

D

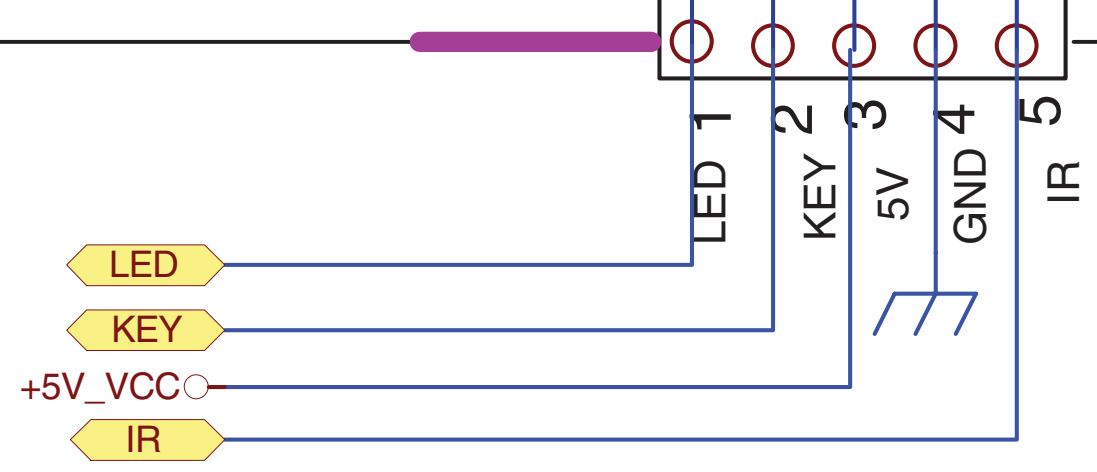
KEYBOARD PANEL

D

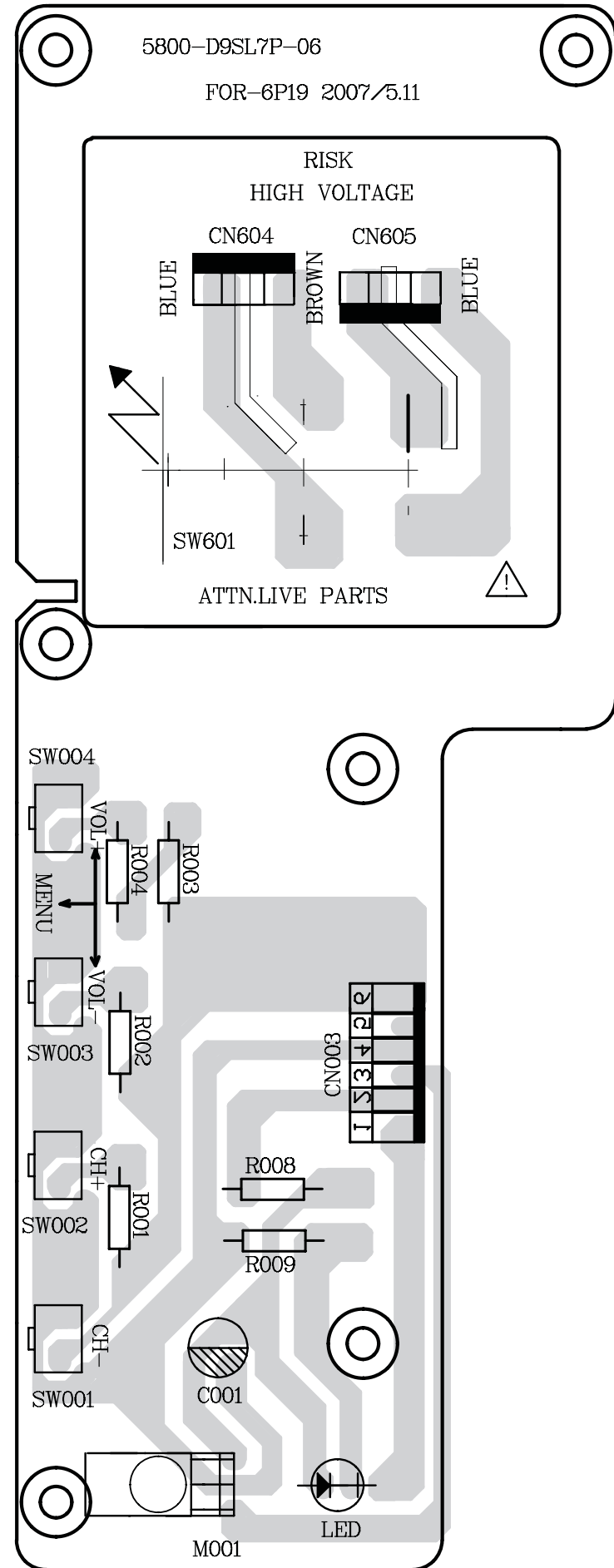


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280607



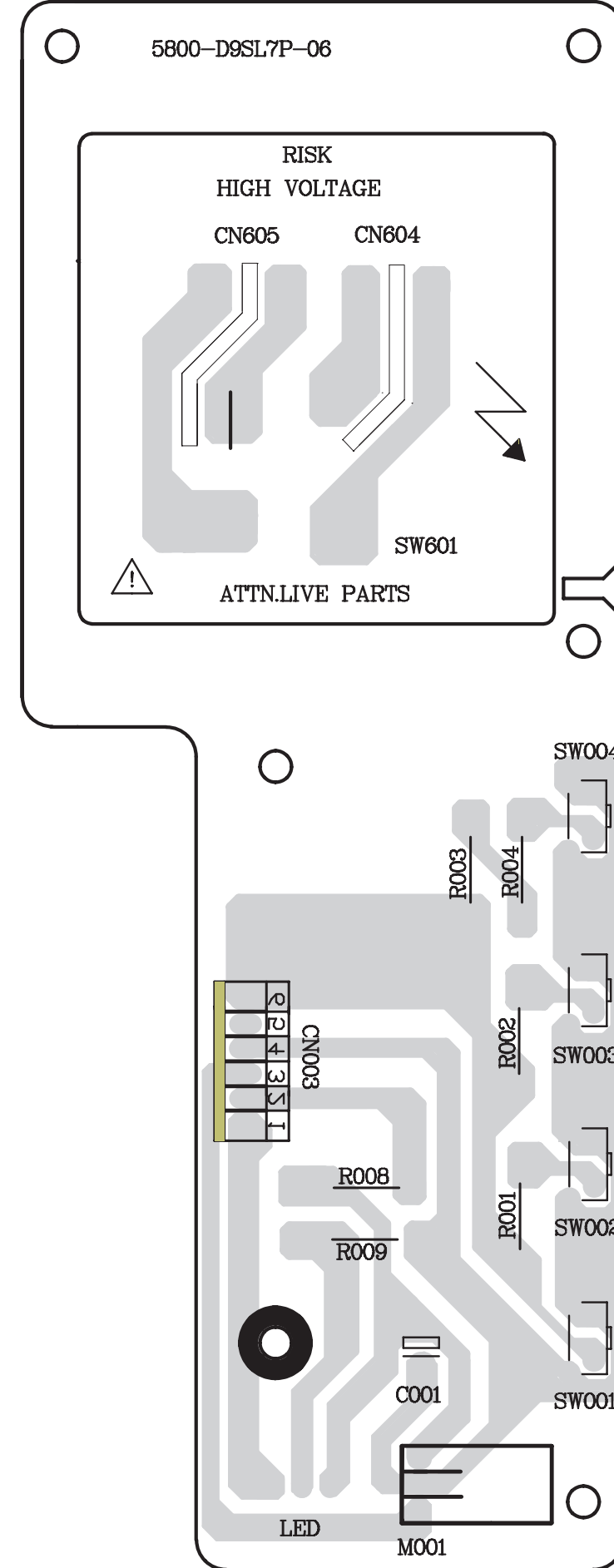
Layout Front Control (Top Side)



5800-D9SL7P-60

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280607

Layout Front Control (Bottom Side)



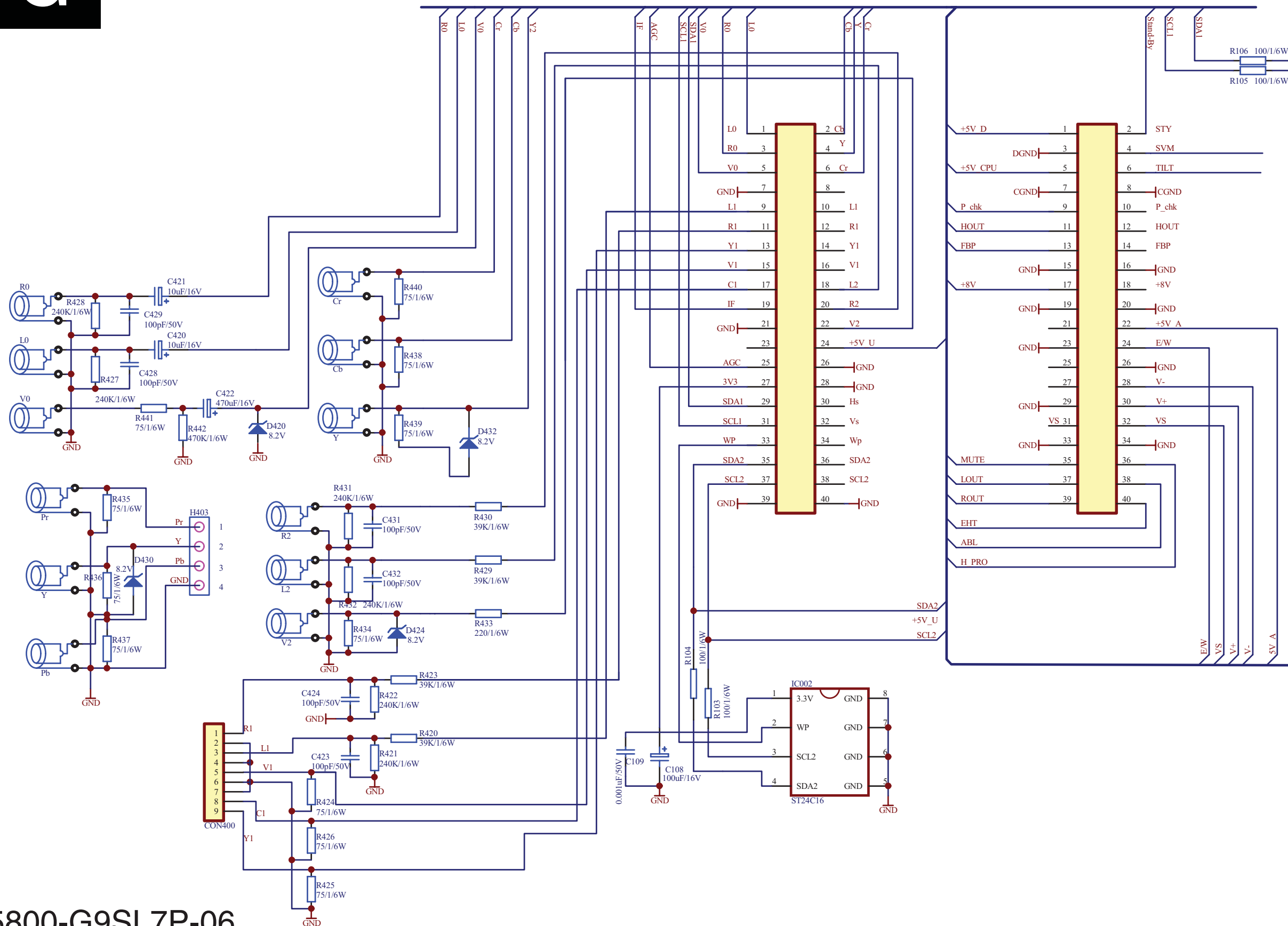
5800-D9SL7P-60

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280607

Side A/V Panel



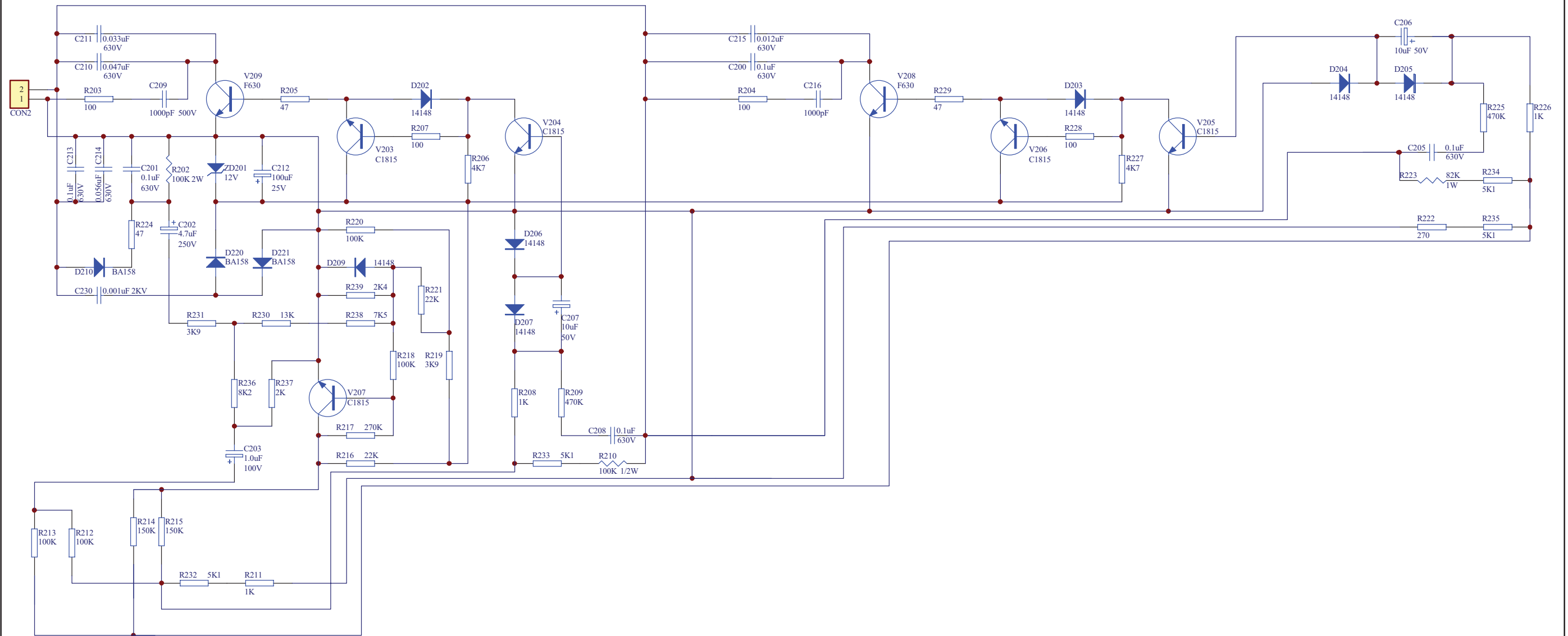
SIDE AV PANEL



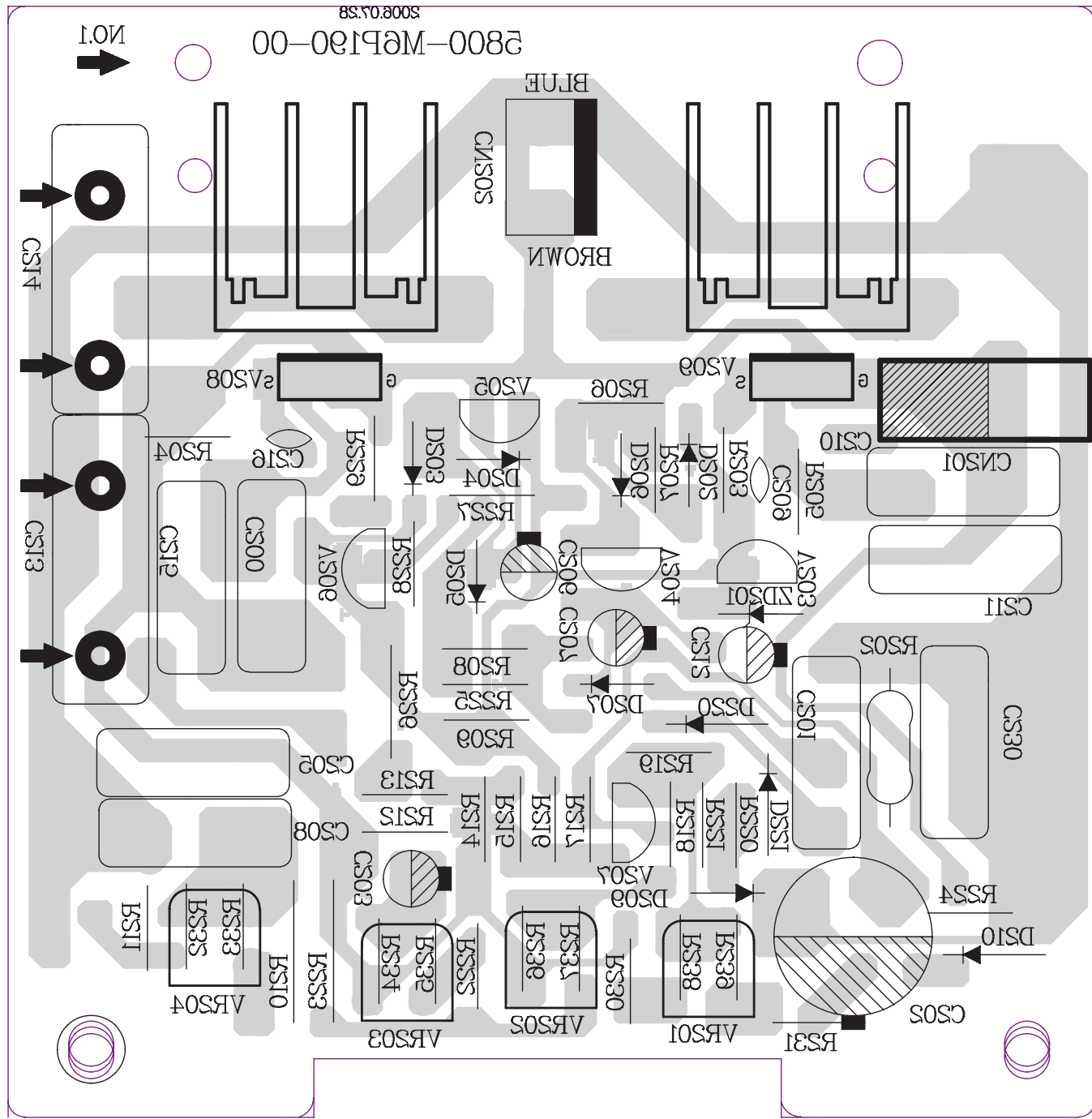
Slim Panel

M SLIM PANEL

M

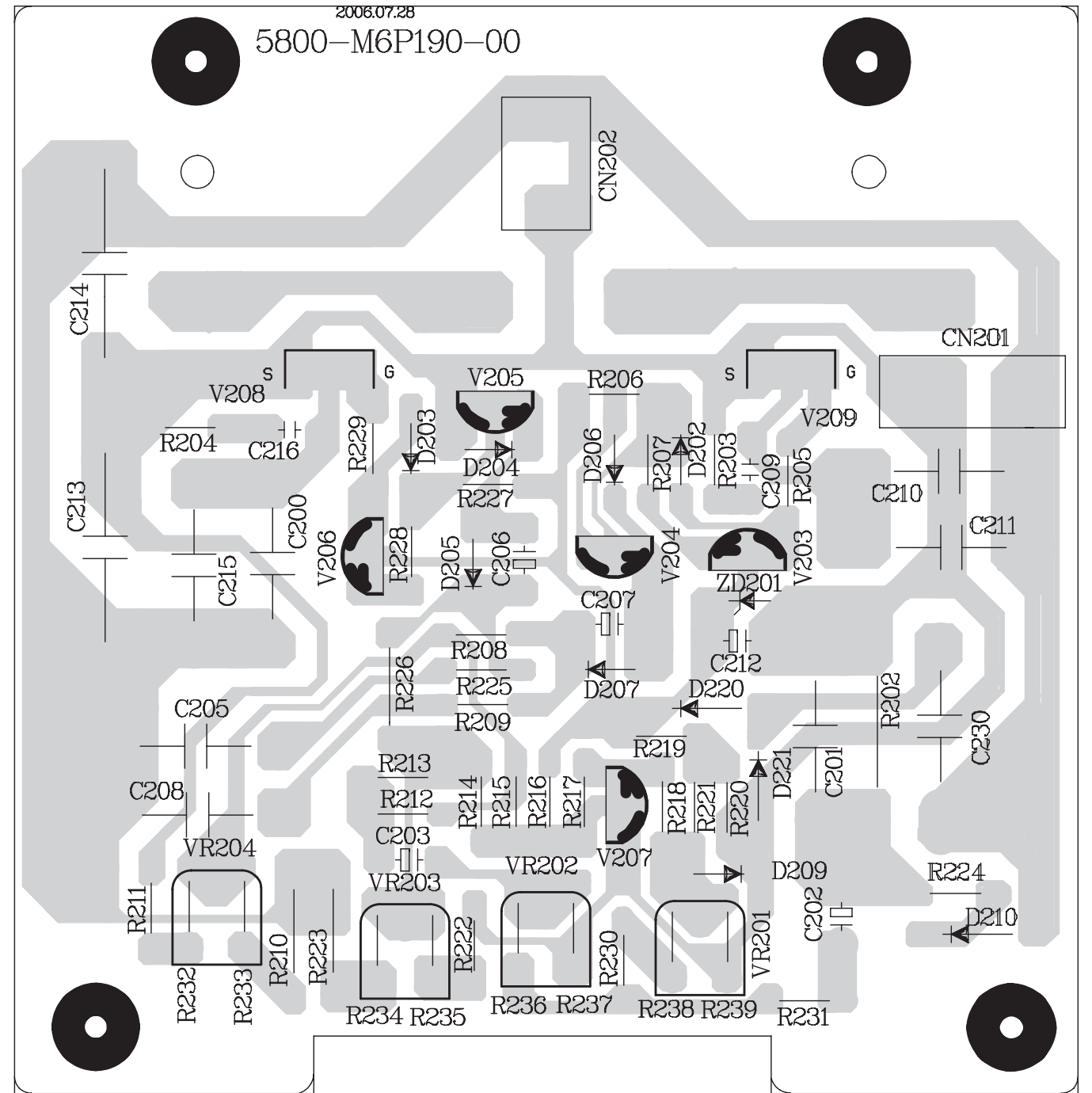


Layout Slim Panel (Top Side)



H_17230_037.eps
290607

Layout Slim Panel (Bottom Side)



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290607

8. Alignments

Index of this chapter:

- 8.1 General Alignment Conditions
- 8.2 Hardware Alignments
- 8.3 Software Alignments
- 8.5 Option Settings

8.1 General Alignment Conditions

8.1.1 Default Alignment Settings

Perform all electrical adjustments under the following conditions:

- Power supply voltage: 230 V_{AC} / 50 Hz (± 10 %).
 - Connect the set to the mains via an isolation transformer with low internal resistance.
 - Allow the set to warm up for approximately 20 to 30 minutes.
 - Measure voltages and waveforms in relation to chassis ground (with the exception of the voltages on the primary side of the power supply).
- Caution:** never use heatsinks as ground.
- Test probe: 100 : 1, Ri > 10 Mohm, Ci < 3.5 pF.
 - Use an isolated trimmer/screwdriver to perform alignments.

8.2 Hardware Alignments

Note: The only hardware alignment in this TV set is the adjustment of the main voltage (B+), see below.

8.2.1 Main Voltage Adjustment

In order to adjust the main voltage, connect a voltage meter to J601, and adjust VR601 to a voltage of 110 V.

8.3 Software Alignments

Put the set in its MENU mode (factory mode or otherwise) as follows (see also figure "Factory Mode" on the next page):

- Set the volume to "0" via the volume button on the TV set.
- Select the [i+] button on the RC while depressing the volume key.
- Use the "up" or "down" button on the RC to navigate to a different Peripheral Menu, if necessary.
- Use the "MENU" button on the RC to navigate to a different Core Menu, if necessary.
- Press the "MENU" button on the RC to switch from the Peripheral Menu to the Core Menu.
- Press the "6" button on the RC to switch from the Core Menu to the Peripheral Menu.
- In the Peripheral Menu (after pressing "6"), enter the code "789" will make available the extra six core Menu blocks PE-1, PE-2, PE-3, PE-4, PE-5 and EP2-WRITE for editing. Press the "MENU" button on the RC to switch from the Peripheral Menu to the Core Menu, using MENU key to navigate through the available 6 core menu blocks.

The different alignment parameters are described further on.

8.3.1 GEOMETRY

Notes:

- Set an **external** pattern generator to a crosshatch video signal and connect the RF output to the aerial input of the TV. Set the amplitude at least 1 mV_{RMS} (60 dBμV) and the frequency to 475.25 MHz. Use system PAL B/G if possible, otherwise match the system of your generator with the received signal in the set.

8.4 Factory mode specification adjustment

Notes:

- Attention: of each menu item, first make a note of the current value; secondly, note the minimum/maximum value of the range that can be adjusted.
- **(default value / adjustment range)** - this item must be set up to its default value within the possible range;
- **(reference value)** - this item can depend on the production circumstances and the product parameters (which may show slight variations), so only reference values are given here;
- **(unnecessary to adjust)** - this item is unnecessary to adjust.

The factory mode includes 10 periphery menus and 6 core menus. You must input the code "789" in the eleventh periphery menu if you want to enter the last two core menus. The switching between the periphery menus takes place using the PRO key "+" and "-". The switching between the core menus is done via the "MENU" key.

All the values found in the various menu items can be adjusted via the VOL key ("+" and "-"). The values found in the Core menu must be adjusted via the PRO key ("+" and "-").

Adjustment details are given below.

Press the factory mode key to enter the factory mode. The PRO key "-" will give the opposite result, you will then leave the factory mode again.

- Brightness balance RED adjustment menu (press key "1" to enter this menu)
 - WPR - 20 / 00-3F (default value / adjustment range)
- Brightness balance GREEN adjustment menu (press key "2" to enter this menu)
 - WPG - 20 / 00-3F (default value / adjustment range)
- Brightness balance BLUE adjustment menu (press key "3" to enter this menu)
 - WPB - 20 / 00-3F (default value / adjustment range)
- Dark balance RED adjustment menu (press key "4" to enter this menu)
 - RED - 07 / 00-0F (default value / adjustment range)
- Dark balance GREEN adjustment menu (press key "5" to enter this menu)
 - GRN - 07 / 00-0F (default value / adjustment range)
- RFAGC adjustment menu:
 - RFAGC - 16 / 00-3F (default value / adjustment range)

Adjustment method: First, receive a video signal of 60 dBμV; next, enter the factory mode and adjust the level of the RFAGC, until the image is completely noise-free (without snowflakes).

- Aging mode menu:
 - AGING
- SCREEN adjustment menu (make sure you have set the VG2-B item of the core menu PE-2 to 3F before you adjust this item)
 - VG2: IS OK

Adjustment method: Receive a video signal of any content, then set the Brightness and Contrast values of the image menu at their middle positions (level 50).

- Adjustment of the screen voltage of the horizontal output transformer: make sure the screen displays the message
 - VG2: IS OK
- Code input menu (press key "6" will enter the menu quickly):
 - P-MOD_ _ _ _

Enter factory mode:

1. Set volume to "0" with the volume button on the set.
2. Select "+" button on RC while depressing the volume key.
3. Select "up" or "down" button to navigate to different peripheral menu
4. Select "MENU" key to navigate to different core menu.
5. Switch from peripheral menu to core press "Menu" key.
6. Switch from core to peripheral menu press "6".
7. Enter code "789" at the peripheral menu after pressing "6" or scroll to the menu in the red box below

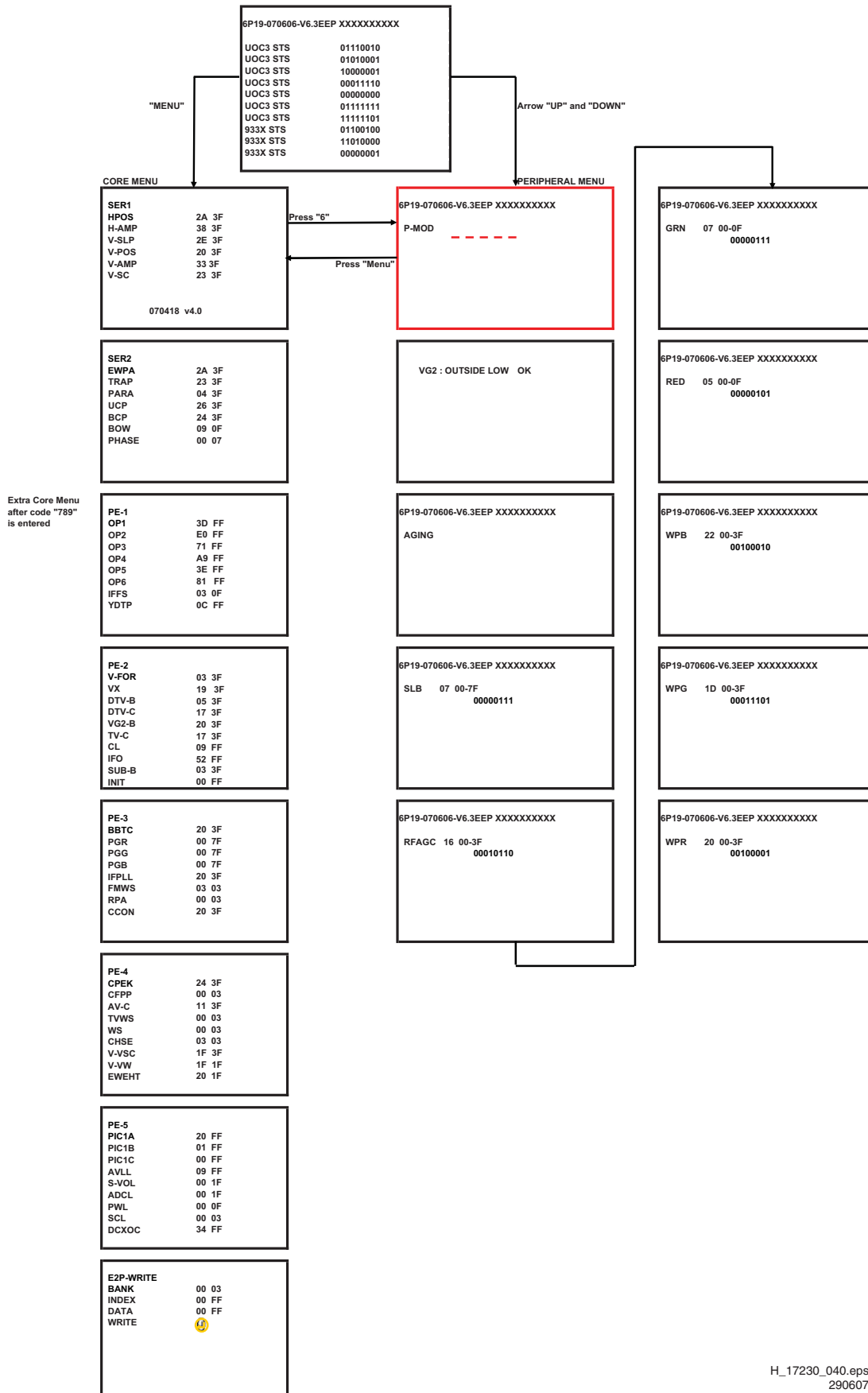
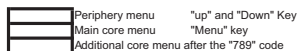


Figure 8-1 Factory Mode

After entering the code "789" and pressing the "menu" key, the core menu will be displayed orderly, or only 2 core menus will be displayed. The content of the core menu is given below:

i. Press key "menu" to display the core menu as below:

- Horizontal parameter adjustment menu (Before adjusting the items of this menu, receive the pane signal or P-card signal, then enter the factory mode to start adjustment)
 - i. SER50HZ.
 - ii. H-POS 1C /00-3F (reference value) Horizontal center.
 - iii. H-AMP 2D /00-3F (no value) Horizontal amplitude.
 - iv. V-SLP 1E /00-3F (reference value) Vertical slope.
 - v. V-POS 1D /00-3F (reference value) Vertical center.
 - vi. V-AMP 16 /00-3F (reference value) Vertical amplitude.
 - vii. V-SC 1C /00-3F (reference value) Vertical linearity.

The above items are all ordinary parameter adjustments. It is unnecessary to explain those in detail. However, pay attention to the fact that the NTSC and PAL Vertical parameter adjustments of this chassis must take place separately from each other.

- Linearity adjustment menu: (the adjustment of the items under this menu is unnecessary)
 - i. SER50HZ.
 - ii. EWPA 32 /00-3F.
 - iii. TRAP 29 /00-3F.
 - iv. PARA 08 /00-3F.
 - v. UCP 2A /00-3F.
 - vi. BCP 27 /00-3F.
 - vii. BOW 05 /00-0F.
 - viii. PHASE 00 /00-07.

Character position, SPK system etc. adjustment menu:

(Attention:OP1 and OP2 are different from each other depending on different modes).

Attention: The menu given below can only be entered when the code "789" is input in the eleventh periphery menu.

- **PE-1**
 - i. OP1 as below 3F /00-FF (default value / adjustment range) Switch setup of video control, commutative flat. etc.
 - ii. OP2 as below E0 /00-FF (default value / adjustment range) Switch setup of SPK system, menu mode. etc.
 - iii. OP3 D1 /00-FF (default value / adjustment range) Switch setup of Vertical protection, super incept. etc.
 - iv. OP4 A9 /00-FF (default value / adjustment range) rest of setup
 - v. OP5 3E /00-FF (default value / adjustment range) rest of setup
 - vi. OP6 81 /00-FF (default value / adjustment range) rest of setup
 - vii. YDTP 0C /00-0F (default value / adjustment range) rest of setup
 - viii. YDSAV 0C /00-FF (default value / adjustment range) rest of setup
- **PE-2**
 - i. FOR 03 /00-3F (default value / adjustment range) Vertical frequency setup.
 - ii. VX 19 / 3F (unnecessary to adjust) Vertical amplitude
 - iii. OSD-H 06 / CF (default value / adjustment range). OSD horizontal position adjustment
 - iv. 5/6VOSD 42/24 (default value / adjustment range). OSD vertical position adjustment
 - v. VG2-B 20 / 00-3F (default value / adjustment range) Screen brightness adjustment.
 - vi. SUB-S 17/ 00-FF (default value / adjustment range) Subsidiary saturation
 - vii. CL 0C / 00-0F (default value / adjustment range) RGB output extent (cathode voltage).
 - viii. IFO 0A / 00-1F (unnecessary to adjust) Fine-adjustment of intermediate frequency.

- ix. SUB-B FF / 06 (unnecessary to adjust) Subsidiary brightness adjustment
- x. .INIT 00 FF
Replace all factory settings.

- VG2-B adjustment method: If you cannot reach the desired effect via the tenth item of the periphery menu, you should try to change the value of this item properly (hardware adjustment), and then adjust the screen in the tenth item of the periphery menu (software adjustment).

- **PE-3**

- i. BBTC 20 /00-3F (default value / adjustment range) Colour temperature keynote setup.
- ii. PGR 00 /00-7F (default value / adjustment range) White balance red setup
- iii. PGG 00 /00-7F (default value / adjustment range). White balance green setup
- iv. PGB 00 /00-7F (default value / adjustment range). White balance blue setup
- v. IFPLL 20 / 00-3F (default value / adjustment range) IF adjustment.
- vi. FMWS 03/ 00-03 (default value / adjustment range) FM demodulation bandwidth
- vii. RPA 00 / 00-03 (default value / adjustment range) Peak RPA.
- viii. CCON 20 / 00-3F (default value / adjustment range) Contrast center point.

- **PE-4**

- i. CPEK 0D /00-3F (default value / adjustment range) Peak volume center point.
- ii. CFPP 00 /00-03 (default value / adjustment range) PAL peak center frequency
- iii. AV-C 17 /00-3F (default value / adjustment range). NTSC peak center frequency
- iv. TVWS 00 /00-03 (default value / adjustment range). YUV peak center frequency
- v. WS 01 / 00-03 (default value / adjustment range) Gamma and white amplitude setup
- vi. CHSE 03 /00-03 (default value / adjustment range) PAL/NTSC identification sensitivity
- vii. V-VSC 1F /00-3F (default value / adjustment range) Vertical adjustment.
- viii. V-VW 1B /00-1F (default value / adjustment range) Horizontal amplitude.
- ix. EWEHT 20 / 00-1F (default value / adjustment range)

- **PE-5**

- i. PIC1A 20 /00-FF (default value / adjustment range) Image upgrade IC.
- ii. PIC1B 01 /00-FF (default value / adjustment range) Image upgrade IC
- iii. PIC1C 00 /00-FF (default value / adjustment range). Image upgrade IC
- iv. AVLL 09 /00-FF (default value / adjustment range). Auto V-controll offset
- v. S-VOL 00 / 00-1F (default value / adjustment range) Mono output adjustment
- vi. ADCL 00 /00-0F (default value / adjustment range) ADC output adjustment
- vii. PWL 00 /00-1F (default value / adjustment range) 933x Peak white limit adjustment.
- viii. SCL 02 /00-03 (default value / adjustment range) 933x Soft clipping level adjustment.
- ix. DCXOC 34 / 00-FF (default value / adjustment range) Colour in-phase range adjustment.

- **E2P - WRITE**
- BANK 00 03
- INDEX 00 FF
- DATA 00 FF
- WRITE

8.5 Option Settings

8.5.1 Introduction

The microprocessor communicates with a large number of I²C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence / absence of these specific ICs (or functions) is made known by the option codes.

8.5.2 Changing options

Enter the factory mode, as has been described earlier in this chapter. All changes in the option settings are saved as soon as you leave the menu. Some changes will only take effect after the set has been switched OFF and ON with the mains switch (cold start).

8.5.3 Option Settings

In the following table, you will find the **(PE-1)** option settings.

Table 8-1 Option bits (can be switched ON or OFF in factory mode; 0 = OFF; 1 = ON)

Option Byte Number (OP1... OP6)	Bit Number (Dec. value)	Option Name	Features	SK6.0A CA
1	0 (1)	OP_BG_SOUND	BG System on/off	1
	1 (2)	OP_M_SOUND	M System on/off	1
	2 (4)	OP_AV2	AV2 socket selection	1
	3 (8)	OP_SVHS	S-video socket selection	1
	4 (16)	OP_DVD	DVD input selection	1
	5 (32)	OP_AV_OUT	AV output	1
	6 (64)	OP_AUTO_SOUND	automatic sound switch	0
	7 (128)	OP_ON_SOURCE	Power ON mode selection	1
2	0 (1)	OP_COMB	Comb filter on/off (available for AV and NTSC)	0
	1 (2)	OP_REFRESH	Factory parameter refurbish	0
	2 (4)	OP_FMWS	bandwith of sound channel	0
	3 (8)	OP_DSK	Dynamic Skin Tone Correction (TV)	0
	4 (16)	OP_DUB	DUB, DBE vol-effect selection (1 = small speaker 25 inch; 0 = big speaker)	0
	5 (32)	OP_RESET	Power ON inspect circuit; 1: open; 2: close	1
	6 (64)	OP_SENSI	sensitivity (during search mode)	1
	7 (128)	OP_TEMP	Colour temperature function	1
3	0 (1)	OP_XDT	X ray test mode (1 = on; 0 = off)	1
	1 (2)	OP_MUTE	Volume interrupt mode	0
	2 (4)	OP_FCO	colour system selection (automatic - non automatic)	0
	3 (8)	OP_EVG	Horizontal protection mode (0 = protection mode; 1 = test mode)	0
	4 (16)	OP_MUS	N system selection (1 = American system; 0 = Japanese system)	1
	5 (32)	OP_FFI	fast filter IF-PLL	0
	6 (64)	OP_CMSS	UOC CMSS bit	1
	7 (128)	OP_SUPERWOOFER	sound effect selection	1
4	0 (1)	OP_DSP	Audio channels treated by DSP	1
	1 (2)	OP_LOUDNESS	Loudness selection	1
	2 (4)	OP_PROG_SCAN	Automatic scan function on/off	1
	3 (8)	OP_IDENT_SENSI	PAL/NTSC colour sensitivity	1
	4 (16)	OP_ACL	Auto colour limit	0
	5 (32)	OP_IDENT_SL	Search Identification signal SL (see Note below)	1
	6 (64)	OP_IDENT_SID	Search Identification signal SID (see Note below)	0
	7 (128)	OP_TILT	Geomagnetism compensation	1
Note: bit 5, bit 6: 00 = SL or SID; 01 = SID; 10 = SL; 11 = SL and SID				
5	0 (1)	OP_V12_ENGINE	V12	1
	1 (2)	OP_M37161	OSD selection (1 = Mitsubishi; 0 = UOCIII)	1
	2 (4)	OP_EQ	Equalizer selection	1
	3 (8)	OP_SMU	restore factory settings	1
	4 (16)	OP_RGB	RGB input selection	1
	5 (32)	OP_SPATIAL	Spatial effect selection	1
	6 (64)	OP_A12	A12 selection	1
	7 (128)	OP_BARCODE	barcode	0
6	0 (1)	OP_16_9	16:9 mode selection	1
	1 (2)	OP_9333	1 = 9333; 0 = 9330	0
	2 (4)	OP_STILL	Frozen picture function	1
	3 (8)	OP_AI	Rear AV	1
	4 (16)	OP_SCREEN_SAVER	screen saver on/off	1
	5 (32)	OP_MUSIC_TV	Allow audio throughput ("0") or not ("1") without the presence of a video signal	1
	6 (64)	OP_CALENDAR	perpetual calendar	1
	7 (128)	OP_SCAN_MODE	Scan mode selection	1

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

Index of this chapter:

- 9.1 Introduction
- 9.2 The various circuits
- 9.3 Abbreviation List
- 9.4 IC Data Sheets

9.1 Introduction

The SK6.0A CA is a CRT TV for the year 2007, based on the 6P19 platform. In this chapter, only a general description of the various circuits is given. For more detailed information, see the circuit diagrams in this manual.

9.2 The various circuits

9.2.1 Tuner

The function of the tuner is to select the channel to be received and suppress the interference of neighboring channels, to amplify the high frequency signal, to improve the receiving sensitivity and SNR, and to generate a PIF signal through frequency conversion.

9.2.2 IF Channel

The IF Channel mainly ensures the sensitivity and selectivity of the complete TV set. The IF AMP integrated in the Ultimate One Chip of the third generation (UOCIII) is made up of a three-stage dual-differential amplifier with a gain value above 70 dB, a SNR of 55 dB and a bandwidth of 7 MHz. The video demodulation circuit is made from the built-in PLL Sync Detector. The spectrum of the demodulation carrier is unitary and it is not affected by the content of the video signal. The built-in PLL circuit of the UOCIII generates a 38.0 MHz or 38.9 MHz demodulation reference signal for the sync detector to demodulate the video signal; this is called "PLL sync demodulation".

9.2.3 Sound Channel

An external ceramic filter is used to select the second SIF signal for the sound channel of UOCIII from the signal output of the video detector. The audio signal is obtained after limiting amplification and demodulation by the intermediate frequency detector for the SIF signal, and then the audio signal is output to the audio amplifier TDA7266., which drives the speaker to provide the sound. The intermediate frequency detector and volume-control attenuator that are built in the UOCIII are set and adjusted via the CPU.

9.2.4 CRT Drive Circuit

In the driver circuit, both the voltage and current of the RGB signal are amplified, after which the CRT drive circuit modulates the cathode beam current of the CRT. The RGB signal input into the driver circuit is of negative polarity.

9.2.5 Power Supply Circuit

The function of the power supply circuit is to supply various stabilized operating voltages and to provide protections against excessive voltages and currents.

9.3 Abbreviation List

2CS	2 Carrier Sound
A2	Commonly known as 2 Carrier Sound (2CS) system
AC	Alternating Current
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
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
AMP	Amplifier
ANC	Automatic Noise Reduction; One of the algorithms of Auto TV
AP	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
AV	Audio Video
AVL	Automatic Volume Level control
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BCL	Beam Current Limiter
CBA	Circuit Board Assembly (or PWB)
CFR	Carbon Film Resistor
ComPair	Computer aided rePair
CPU	Central Processor Unit
CRT	Cathode Ray Tube (or picture tube)
CVBS	Composite Video Blanking and Synchronisation
CVI	Component Video Input
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz. D= VHF-band, K= UHF-band
DAC	Digital to Analogue Converter
DC	Direct Current
DC-filament	Filament supply voltage
DFU	Directions For Use: owner's manual
DPL	Dolby Pro Logic
DRAM	Dynamic RAM; dynamically refreshed RAM
DVD	Digital Versatile Disc
EEPROM	Electrically Erasable and Programmable Read Only Memory
EHT	Extreme High Tension; the voltage between the cathode and the shadow mask that accelerates the electrons towards the screen (around 25 kV)
EMI	Electro Magnetic Interference; Leakage of high-frequency radiation from a transmission medium
EU	EUrope
EW	East West, related to horizontal deflection of the set
EW-DRIVE	East -West correction drive signal.
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FBL	Fast Blanking: DC signal accompanying RGB signals
FE	Front End; Tuner and RF part together
Field	Each interlaced broadcast FRAME is composed of two Fields, each Field consists of either Odd or Even lines
Filament	Filament of CRT
FM	Field Memory / Frequency Modulation

Frame	A complete TV picture comprising all lines (625/525)		America (colour carrier PAL M= 3.575612 MHz and PAL N= 3.582056 MHz)
FTV	Flat TeleVision		
G	Green	PCB	Printed Circuit Board (or PWB)
H	H_sync to the module	PIF	Picture Intermediate Frequency
H-DRIVE	Horizontal Drive	PLL	Phase Locked Loop; Used for e.g. FST tuning systems. The customer can directly provide the desired frequency
H-FLYBACK	Horizontal Flyback		
H-OUT	H_sync output of the module / Horizontal Output pulse		
HA	Horizontal Acquisition; horizontal sync pulse	Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
HFB	Horizontal Flyback Pulse; Horizontal sync pulse from large signal deflection		
HW	Hardware	PTC	Positive Temperature Coefficient, non linear resistor (resistance increases if temperature increases)
I	Monochrome TV system. Sound carrier distance is 6.0 MHz. VHF- and UHF-band	PWB	Printed Wiring Board (also called PCB or CBA)
I ² C	Inter IC bus (also called IIC)		
I ² S	Inter IC Sound bus	QSS	Quasi Split Sound
IC	Integrated Circuit	R	Right audio channel / Red
IF	Intermediate Frequency	RAM	Random Access Memory
IIC	Inter IC bus (also called I2C)	RC	Remote Control transmitter
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.	RC5 (6)	Remote Control system 5 (6), the signal from the remote control receiver
		RF	Real Flat (picture tube) or Radio Frequency
IO	In/Out	RGB	Red, Green, and Blue colour space; The primary colour signals for TV. By mixing levels of R, G, and B, all colours (Y/C) are reproduced
IR	Infra Red		
L	Left audio channel		
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I	RGBHV	Red, Green, Blue, Horizontal sync, and Vertical sync
LATAM	LATin America	RMS	Root Mean Square value
LED	Light Emitting Diode	ROM	Read Only Memory
LOT	Line Output Transformer (also called FBT); The transformer in which the EHT is generated	SAP	Secondary Audio Program; Generally used to transmit audio in a second language
LS	Loud Speaker	SAW	Surface Acoustic Wave
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz. M= 525 lines @ 60 Hz, N= 625 lines @ 50 Hz	SC	SandCastle: two-level pulse derived from sync signals
		S/C	Short Circuit
MOFR	Metal Oxide Film Resistor	SCL	Serial Clock signal on I ² C bus
MOSFET	Metal Oxide Semiconductor Field Effect Transistor	SD	Standard Definition
		SDA	Serial Data line of I ² C bus
MPX	MultiPleX	SDRAM	Synchronous DRAM
NAFTA	North American Free Trade Association: Trade agreement between Canada, USA and Mexico	SIF	Sound Intermediate Frequency
		SMC	Surface Mounted Component
NC	Not Connected	SMD	Surface Mounted Device
NICAM	Near Instantaneously Companded Audio Multiplexing; This is a digital sound system, mainly used in Europe	SMPS	Switched Mode Power Supply
		SND	SouND
NTC	Negative Temperature Coefficient, non-linear resistor (resistance decreases if temperature increases)	SNR	Signal to Noise Ratio
		SRAM	Static RAM
NTSC	National Television Standard Committee. Colour system used mainly in North America and Japan. Colour carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)	STBY	STandBY
		SVHS	Super Video Home System
		TBD	To Be Defined
		TXT	Teletext; TXT is a digital addition to analogue TV signals that contain textual and graphical information (25 rows x 40 columns). The information is transmitted within the first 25 lines during the Vertical Blank Interval (VBI)
		µC	Microcontroller
NVM	Non Volatile Memory; IC containing data such as alignment values, preset stations	UOC	Ultimate One Chip
		µP	Microprocessor
OB	Option Byte	UV	Colour difference signals
OC	Open Circuit	V	V_sync
OP	OPtion byte	V-BAT	Main supply for deflection (usually 141 V)
OSD	On Screen Display	VA	Vertical Acquisition
P50	Project 50; Communication protocol between TV and peripherals	VBI	Vertical Blanking Interval; Time during which the video signal is blanked when going from bottom to top of the display
PAL	Phase Alternating Line; Colour system mainly used in West Europe (colour carrier= 4.433619 MHz) and South	VCR	Video Cassette Recorder
		VGA	Video Graphics Array
		VIF	Video Intermediate Frequency

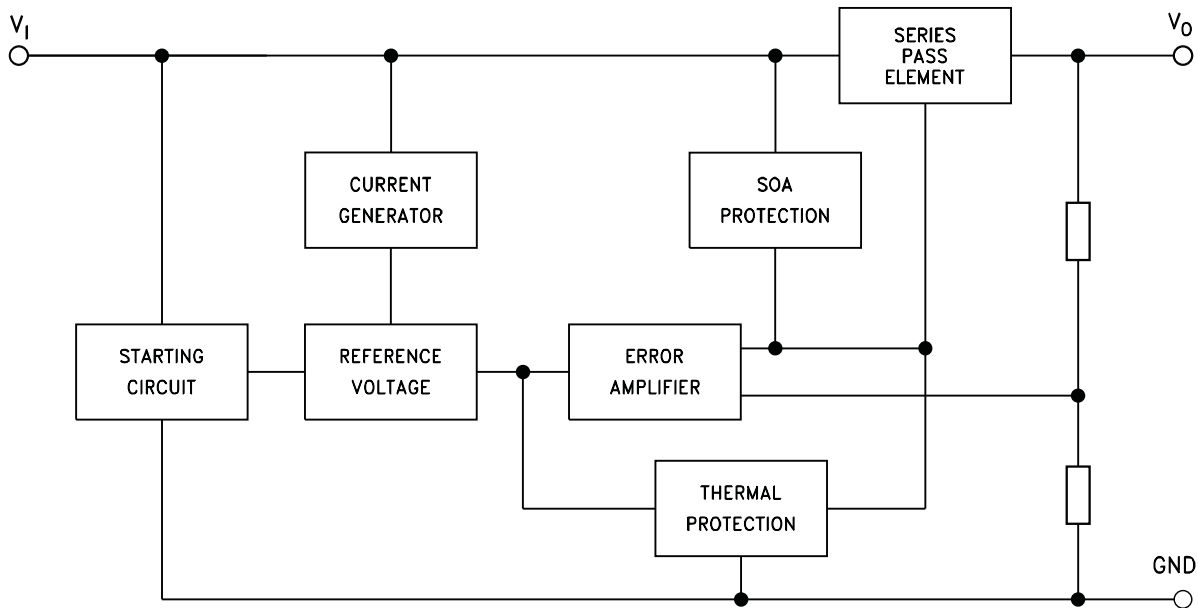
WE	Write Enable control line
WST	World System Teletext
XTAL	Quartz crystal
Y	Luminance signal

9.4 IC Data Sheets

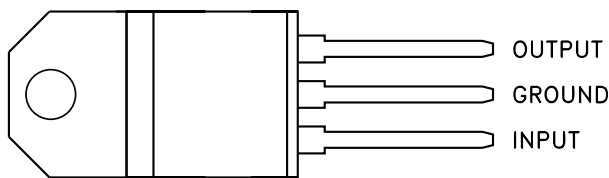
This section shows the internal block diagrams and pin layouts of ICs that are drawn as "black boxes" in the electrical diagrams.

9.4.1 Diagram A1, L7800 (IC604:608)

Block Diagram

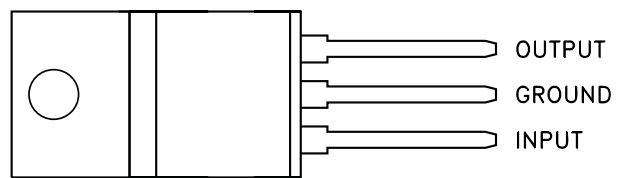


Pin Configuration



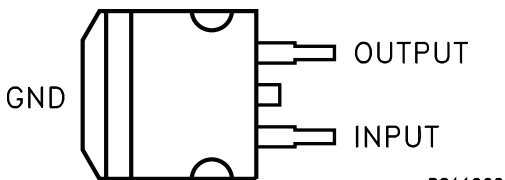
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TO-220



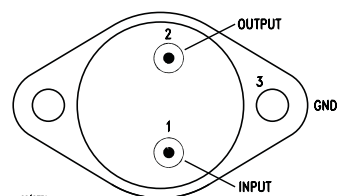
CS05700

TO220FP



PC11920

D²PAK (Any Type)



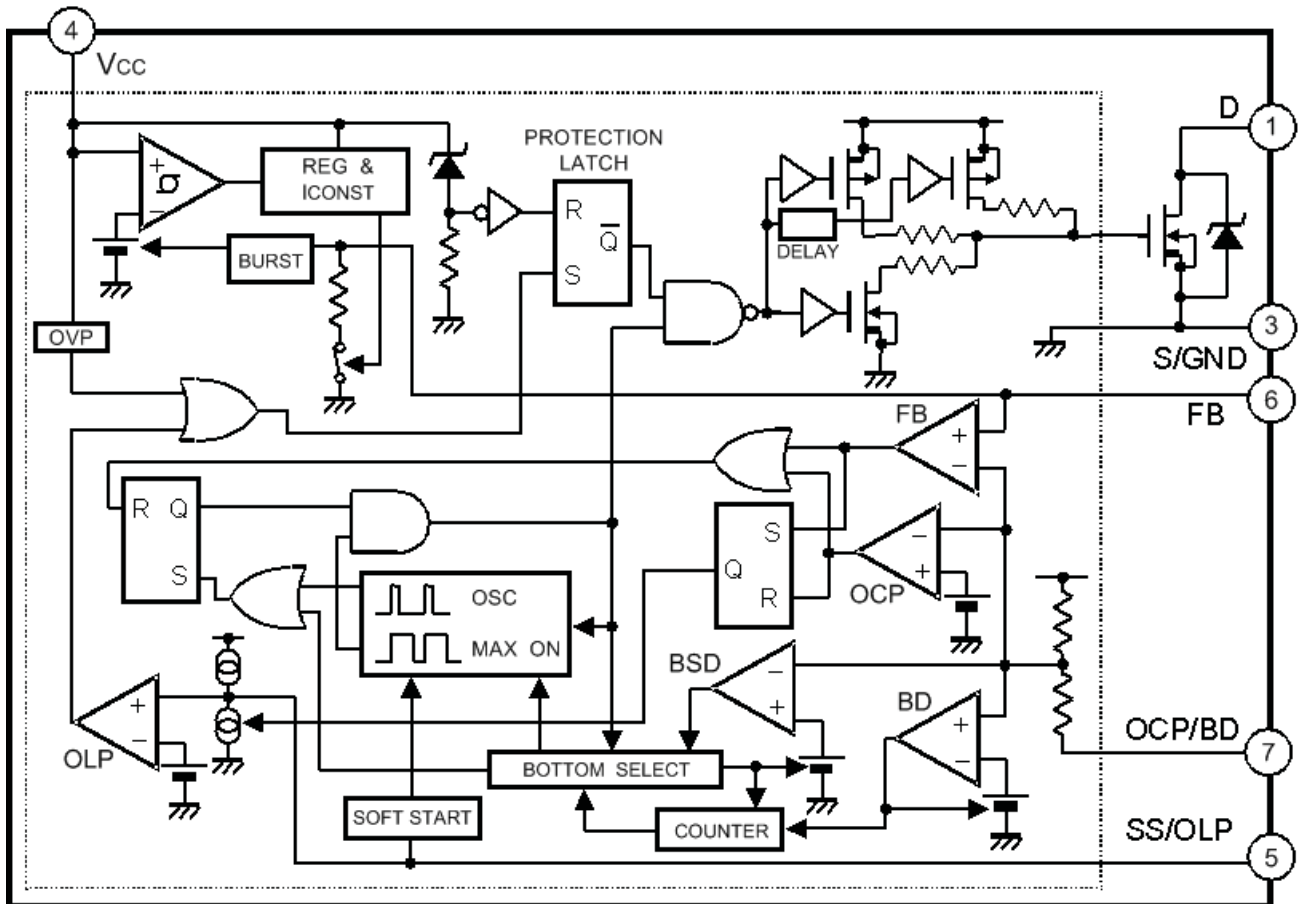
CS12758

TO-3

Figure 9-1 Internal block diagram and pin configuration

9.4.2 Diagram A1, STR-W6756 (IC601)

Block Diagram



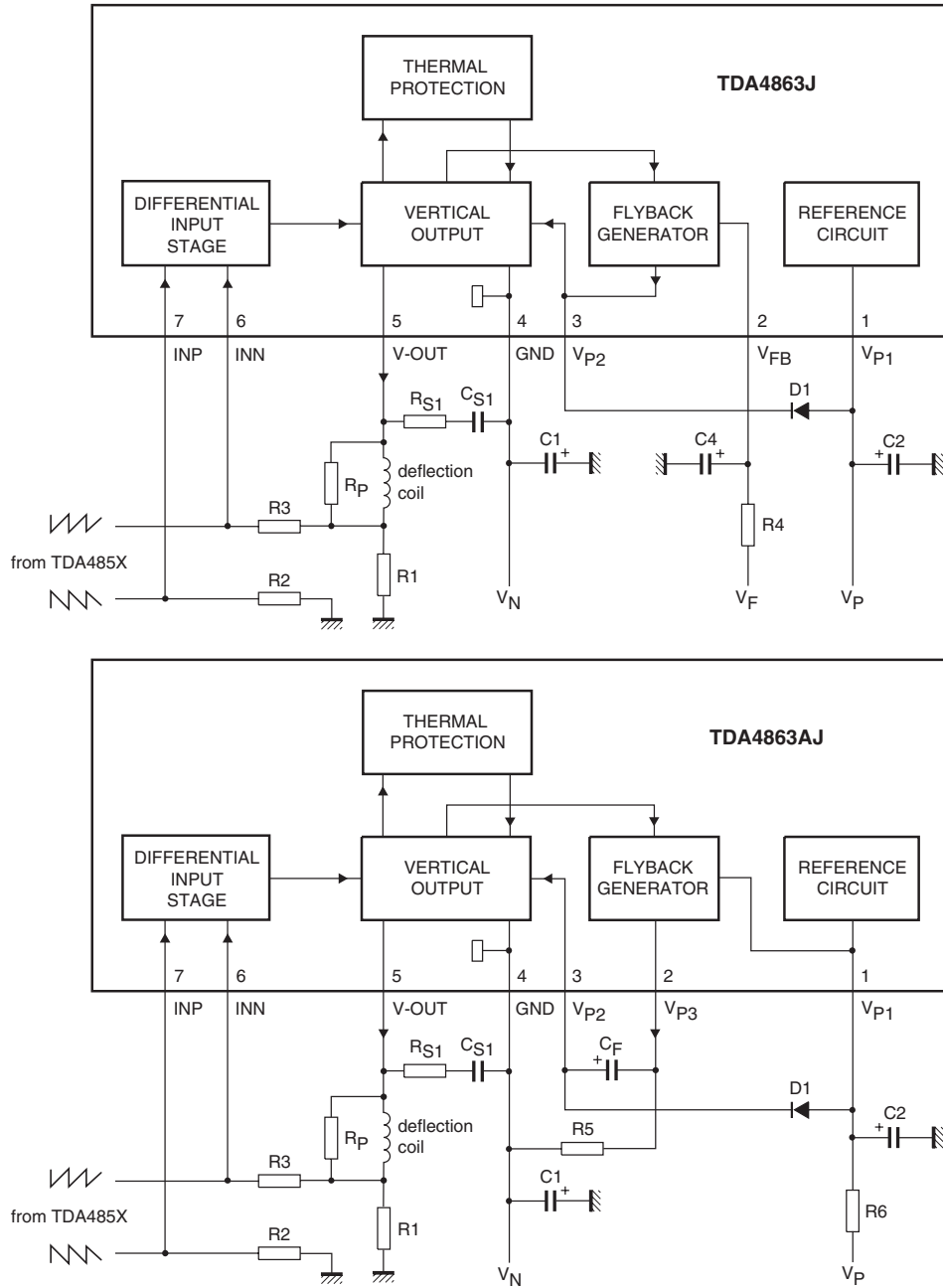
Pin Configuration



Figure 9-2 Internal block diagram and pin configuration

9.4.3 Diagram A3, TDA4863 (IC301)

Block Diagram



Pin Configuration

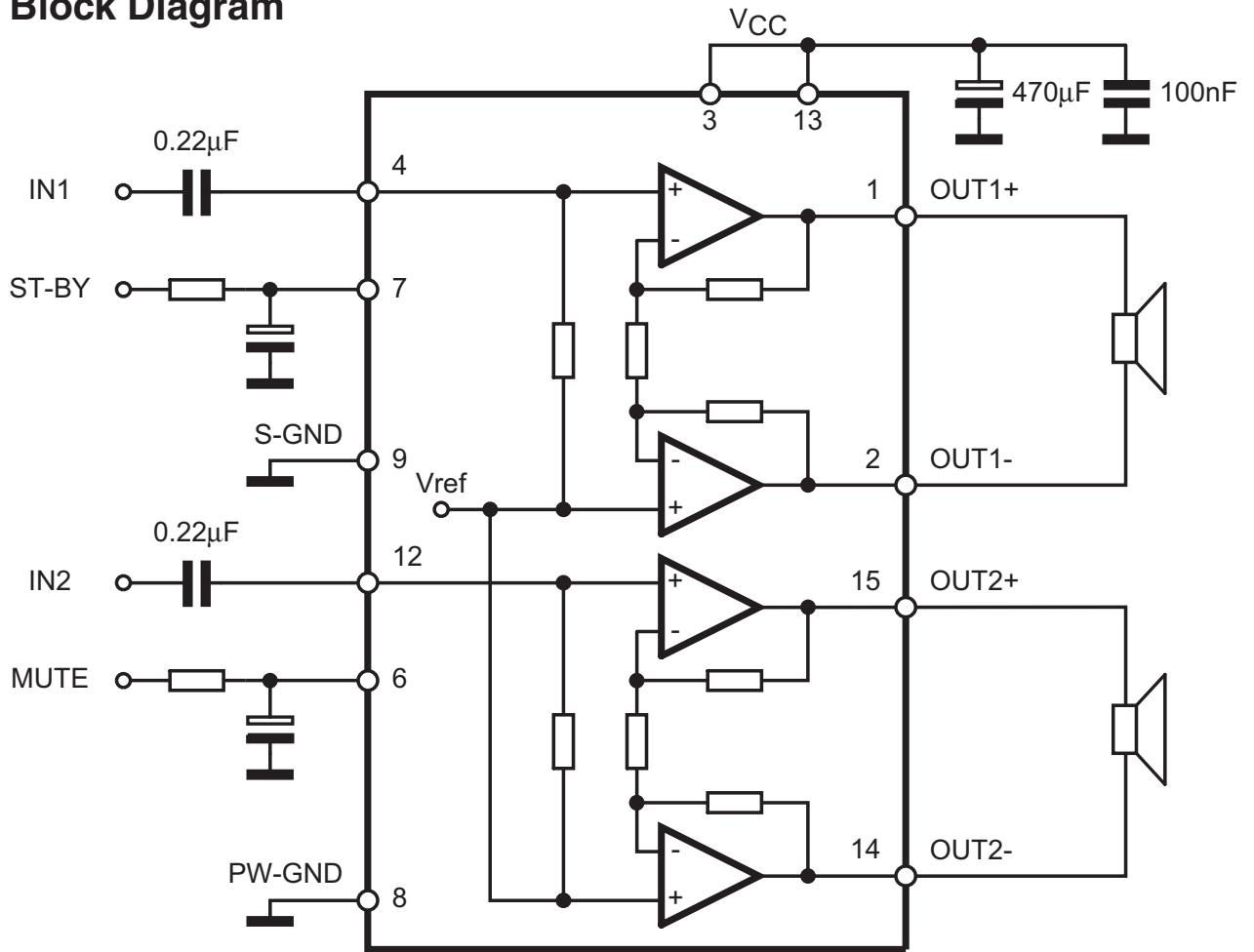


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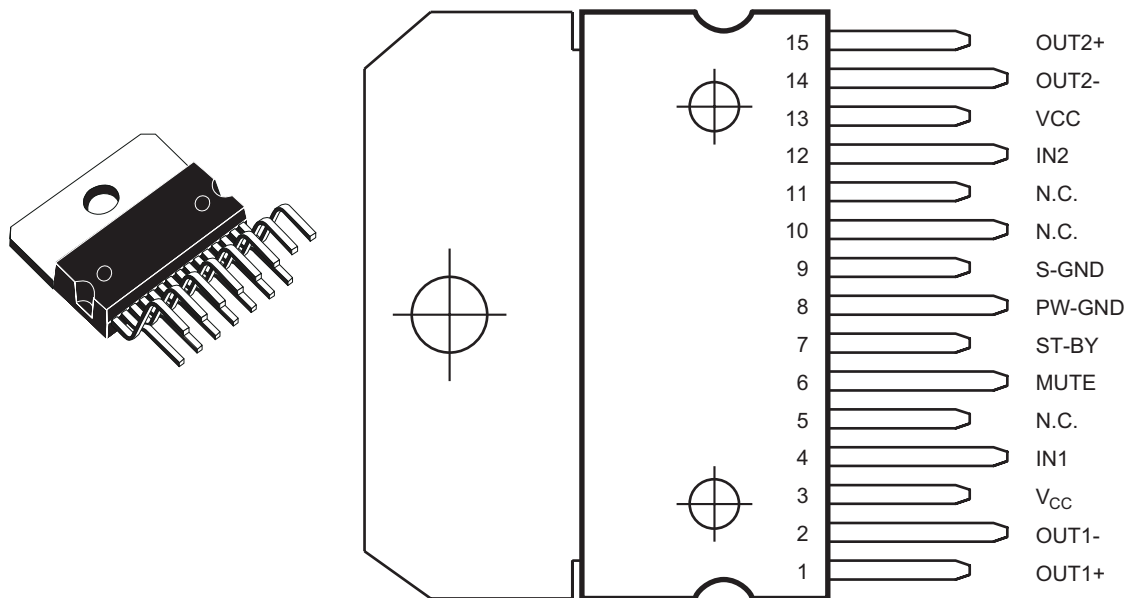
Figure 9-3 Internal block diagram and pin configuration

9.4.4 Diagram A6, TDA7266B (IC401)

Block Diagram



Pin Configuration

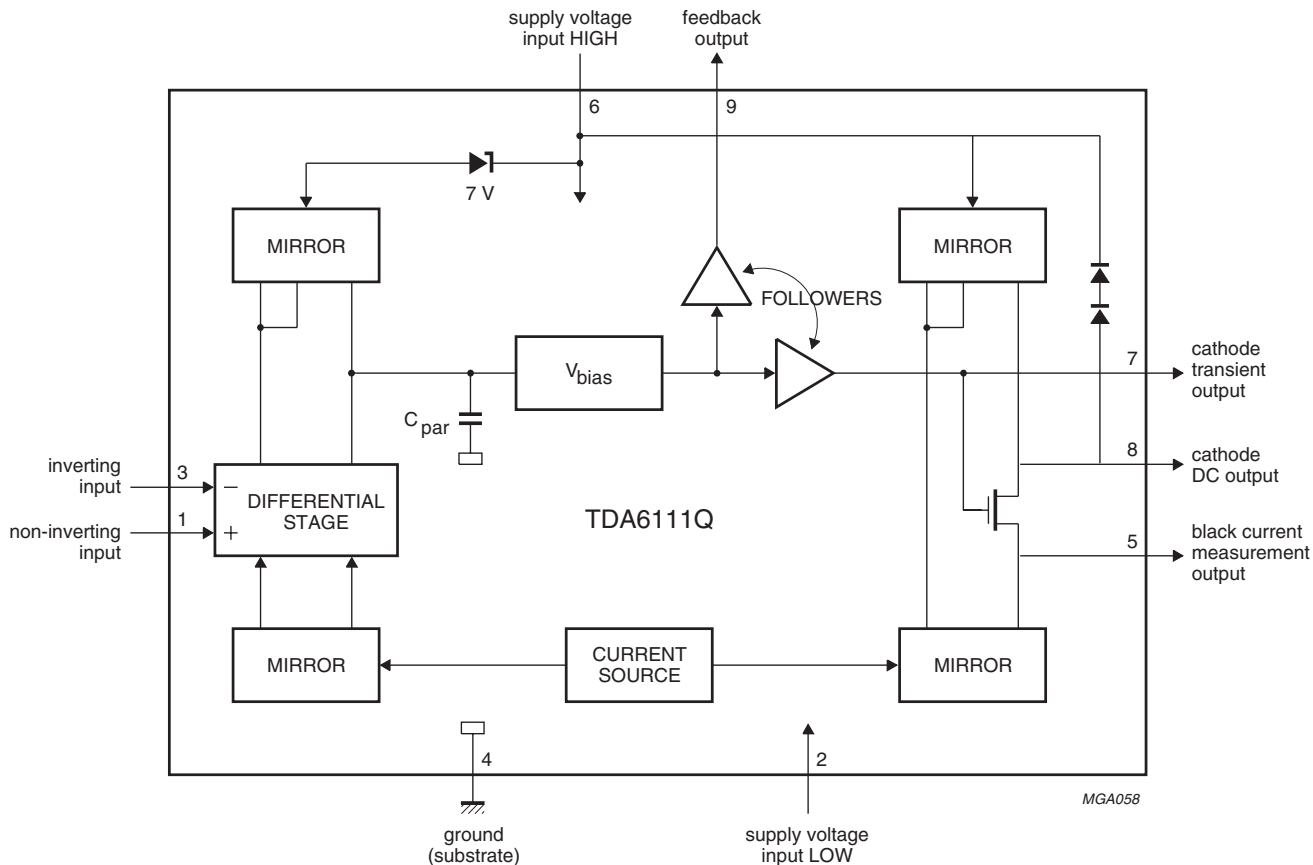


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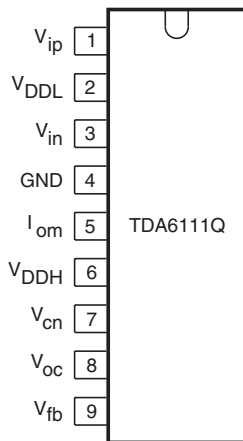
Figure 9-4 Internal block diagram and pin configuration

9.4.5 Diagram B1, TDA6111Q (IC501:503)

Block Diagram



Pin Configuration

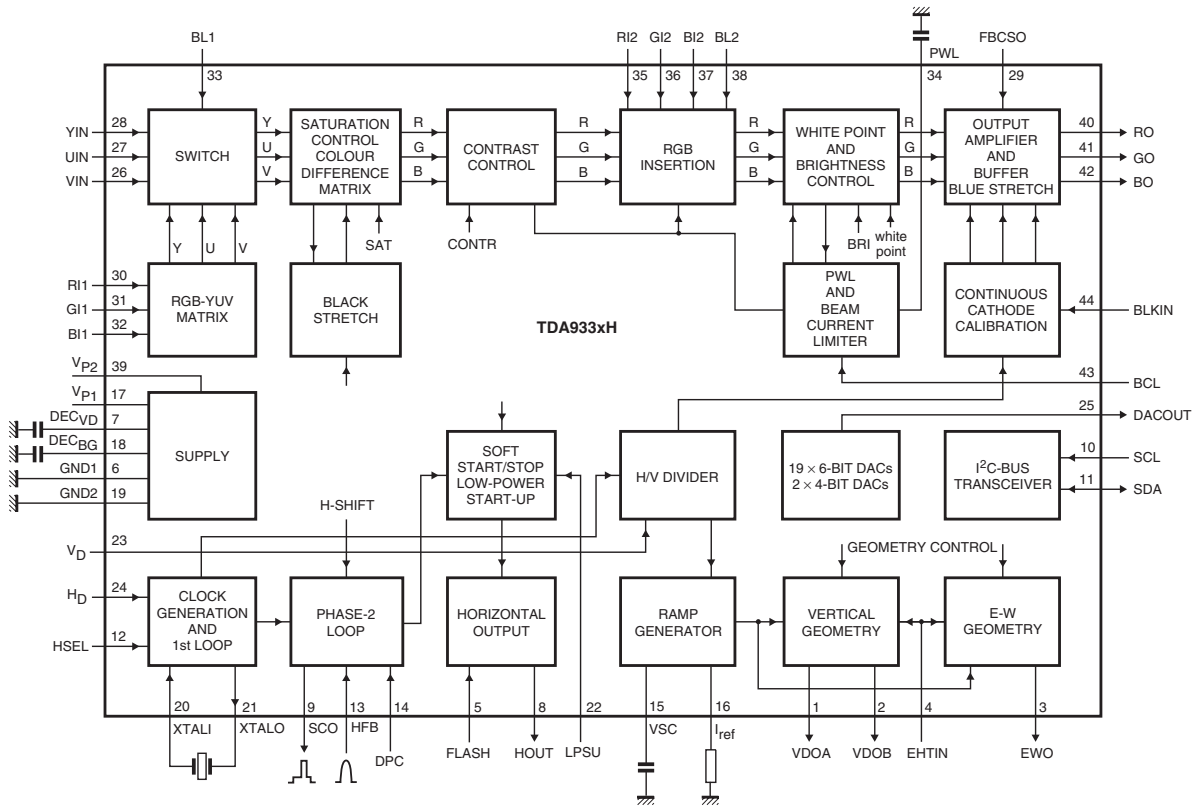


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Figure 9-5 Internal block diagram and pin configuration

9.4.6 Diagram C1, TDA9333 (UN500)

Block Diagram



Pin Configuration

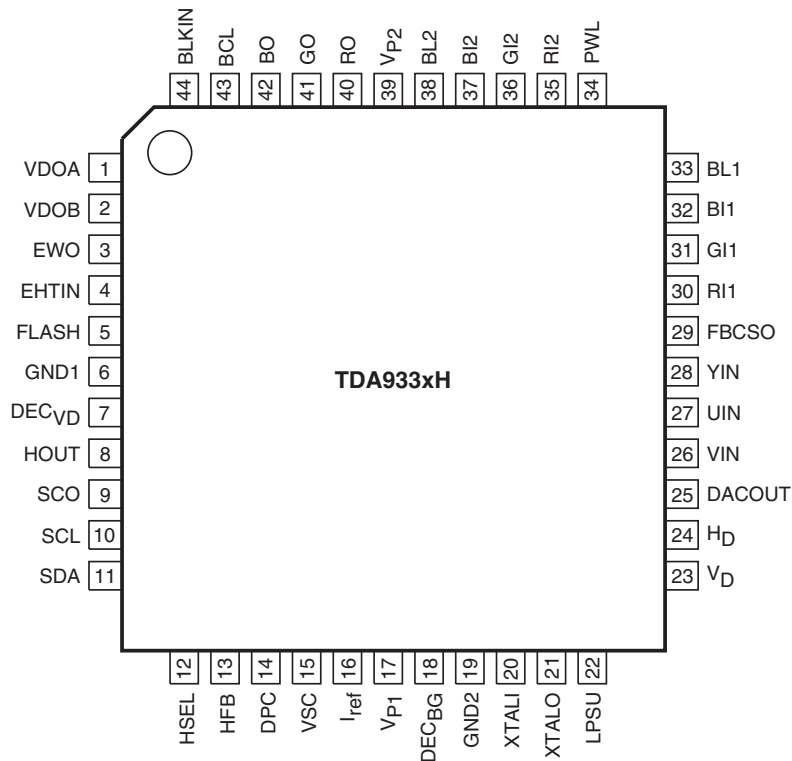


Figure 9-6 Internal block diagram and pin configuration

9.4.7 Diagram C1, TDA9333 (UN500)

Block Diagram (not available)

Pin Configuration

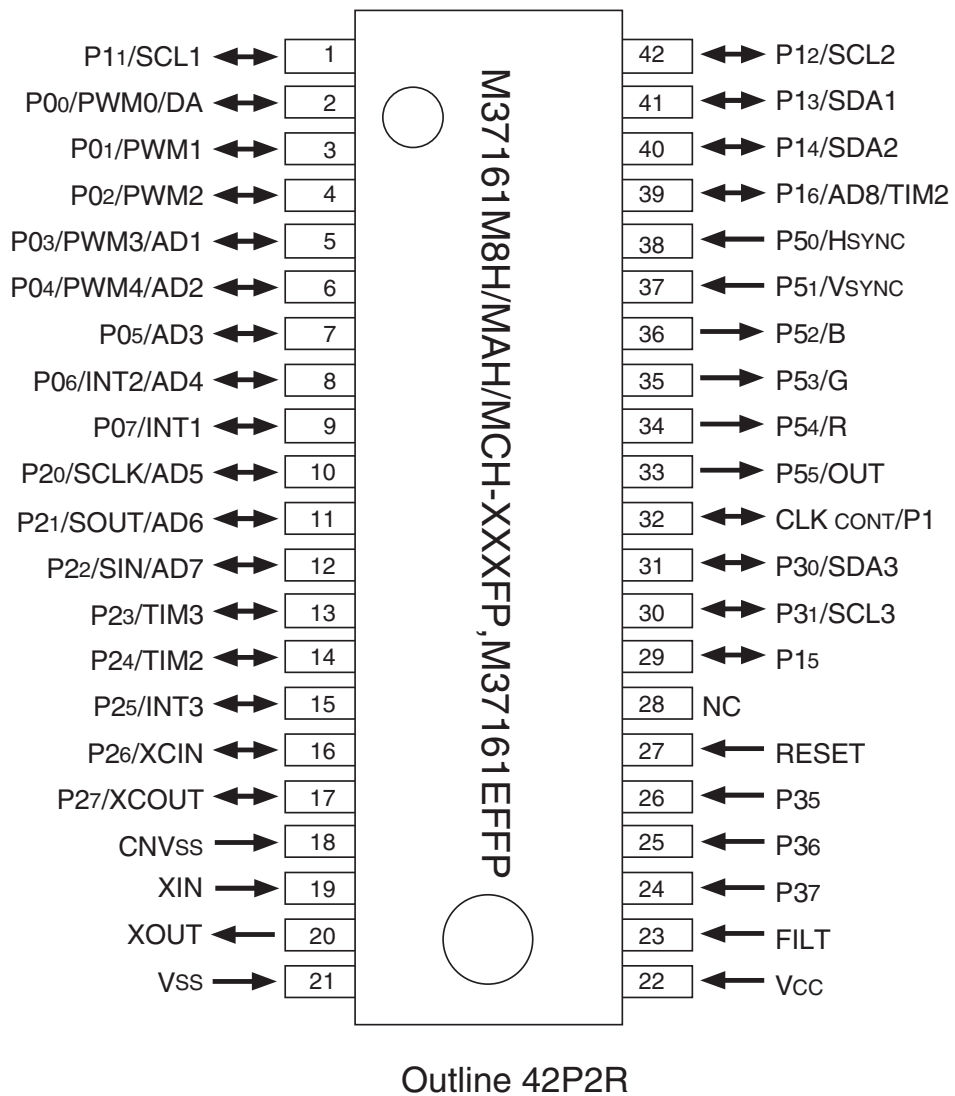


Figure 9-7 Internal block diagram and pin configuration

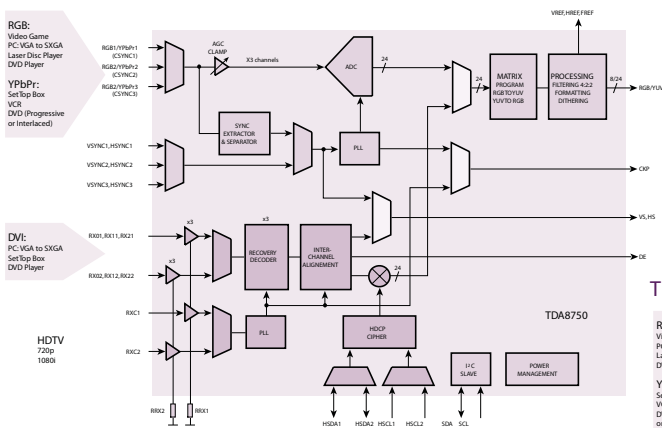
9.4.9 Diagram C4, TDA8759 (UN403)

TDA8750/TDA8751/TDA8754/TDA8756/TDA8759

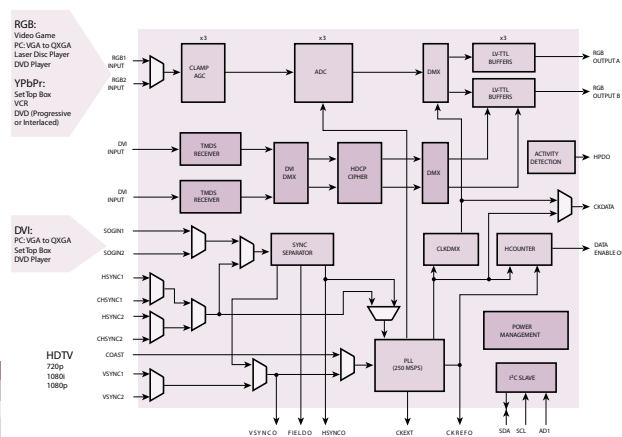
Universal data converter interface products for flat panel applications



TDA8750: 8-Bit 81/110 Msp/s video converter interface + DVI



TDA8756: 8-Bit 110/270 Msp/s video converter interface + DVI



Summary table of data converter interface products and features for displays systems

Features	TDA8756	TDA8754	TDA8751	TDA8750	TDA8759
Analog Path	8-Bit	8-Bit	10-Bit	8-Bit	8-Bit
Resolution	3.3V/1.8V	3.3V	3.3V/1.8V	3.3V/1.8V	3.3V
Analog Supply	110, 140, 170, 205, 250, 270	110, 140, 170, 205, 250, 270	81	81, 110	81, 110
Speed (Msp/s)	2(RGB/YUV)	2(RGB/YUV)	3(RGB/YUV)	3(RGB/YUV)	3(RGB/YUV)
PGA	Yes	Yes	Yes	Yes	Yes
AGC	No	No	Yes	Yes	Yes
Sync-on Green	Yes	Yes	Yes	Yes	Yes
Sync Separator	Yes	Yes	Yes	Yes	Yes
RGB <-> YUV Matrix	No	No	Yes	Yes	Yes
YUV output formatting	No	No	Yes	Yes	Yes
Frame/field detection	Yes	Yes	Yes	Yes	Yes
Input activity detection	Yes	Yes	Yes	Yes	Yes
DVI Path	Yes	N/A	Yes	Yes	N/A
Two Link	Yes	N/A	No	No	N/A
Dual link	Yes	N/A	110	110	N/A
Speed per link (Msp/s)	165	N/A	Yes	Yes	N/A
HDCP	Yes	N/A	Yes	Yes	N/A
Package	LBGA208	LQFP144/LBGA208	LQFP176	LQFP176	LQFP176

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Figure 9-9 Internal block diagram and pin configuration

10. Spare Parts List

29PT8667/93

Various

CRT	9965 100 05195	29"LG.A68ERS370X V4
F601	9965 000 40615	Fuse T3.15A 250V
H602	9965 100 05194	Degaussing Coil
SW001	9965 100 05199	Tact Switch
SW002	9965 100 05199	Tact Switch
SW003	9965 100 05199	Tact Switch
SW004	9965 100 05199	Tact Switch
TUNER	9965 000 41220	World Standard Tuner
TWL	9965 100 05200	Loudsp. 8Ω 10W
TWR	9965 100 05200	Loudsp. 8Ω 10W
ZN100	9965 000 41212	SAW Filter K9352M 38M
ZN101	9965 000 41211	SAW Filter K3955M 38M

—||—

C001	9965 000 41108	100μF 20% 10V
C101	9965 000 40156	0.01μF 50V
C102	9965 000 40307	22μF 50V 20%
C103	9965 000 40156	0.01μF 50V
C105	9965 000 40175	47μF 20% 16V
C106	9965 000 40156	0.01μF 50V
C107	9965 000 40181	4.7μF 50V-100V 20%
C108	9965 000 40172	100μF 20% 16V
C109	9965 000 40526	0.001μF 50V
C200	9965 100 05185	0.10μF 5% 630V
C201	9965 100 05185	0.10μF 5% 630V
C202	9965 100 05176	4.7μF 20% 400V
C203	9965 100 05175	1μF 20% 100V
C205	9965 100 05185	0.10μF 5% 630V
C206	9965 000 40179	10μF 20% 50V-63V
C207	9965 100 05172	10μF 20% 25V
C208	9965 100 05185	0.10μF 5% 630V
C209	9965 000 41099	0.001μF 500V
C210	9965 100 05179	0.047μF 630V
C211	9965 000 41145	PFC 0.033μF 5% 630V
C212	9965 000 41113	100μF 20% 25V
C213	9965 100 05185	0.10μF 5% 630V
C214	9965 100 05179	0.047μF 630V
C215	9965 100 05178	0.012μF 5% 630V
C216	9965 000 41099	0.001μF 500V
C230	9965 100 05200	0.001μF
C301	9965 100 05186	56pF 10% 500V
C302	9965 100 05181	0.0002μF 2kV
C303	9965 100 05180	0.0039μF
C304	9965 100 05182	0.0082μF
C305A	9965 000 41143	0.018μF 5% 630V
C307	9965 000 41145	PFC 0.033μF 5% 630V
C308	9965 000 40559	4.7μF 20% 50V
C309	9965 000 40526	0.001μF 50V
C310	9965 100 05174	220μF 20% 50V
C311	9965 000 41100	0.0047μF 500V
C312	9965 100 05170	470pF 10% 2kV
C313	9965 000 41099	0.001μF 500V
C314	9965 000 40210	Mylar 0.022μF 100V
C315	9965 000 40181	4.7μF 50V-100V 20%
C316	9965 000 40551	47μF 20% 160V
C318	9965 000 40166	680pF 500V
C319	9965 000 41119	22μF 20% 250V
C322	9965 000 41102	CerCap 0.001μF 1kV
C323	9965 000 40178	1μF 20% 50V
C324	9965 000 41146	0.33μF 10% 63-100V
C325	9965 000 40547	100μF 20% 50V
C326	9965 000 40544	1000μF 20% 25V
C327	9965 000 40560	Mylar 0.1μF 100V
C328	9965 000 40186	0.1μF 10% 63-100V
C329	9965 000 40526	0.001μF 50V
C330	9965 000 40156	0.01μF 50V
C331	9965 000 40166	680pF 500V
C332	9965 000 40544	1000μF 20% 25V
C333	9965 000 40156	0.01μF 50V
C334	9965 000 40156	0.01μF 50V
C335	9965 000 40544	1000μF 20% 25V
C336	9965 000 40166	680pF 500V
C339	9965 000 41147	0.1μF 5% 250V
C342	9965 100 05156	2Ω 5% 2W
C380	9965 000 40178	1μF 20% 50V
C381	9965 000 41113	100μF 20% 25V
C382	9965 000 40178	1μF 20% 50V
C383	9965 000 40187	0.22μF 10% 63-100V
C401	9965 000 40156	0.01μF 50V
C402	9965 000 40212	Mylar 0.0047μF 100V
C403	9965 000 40212	Mylar 0.0047μF 100V
C404	9965 000 40156	0.01μF 50V
C405	9965 000 40187	0.22μF 10% 63-100V

C406	9965 000 40187	0.22μF 10% 63-100V
C407	9965 000 40172	100μF 20% 16V
C408	9965 000 41112	4.7μF 20% 16V
C409	9965 000 40540	22μF 20% 16V
C410	9965 000 41114	470μF 20% 25V
C411	9965 000 40156	0.01μF 50V
C420	9965 000 40171	10μF 20% 16V
C421	9965 000 40171	10μF 20% 16V
C422	9965 000 40176	470μF 20% 16V
C423	9965 000 41097	100pF 50V
C424	9965 000 41097	100pF 50V
C428	9965 000 41097	100pF 50V
C429	9965 000 41097	100pF 50V
C431	9965 000 41097	100pF 50V
C432	9965 000 41097	100pF 50V
C501	9965 000 40547	100μF 20% 50V
C502	9965 000 40156	0.01μF 50V
C503	9965 100 05173	22μF 20% 25V
C504	9965 000 40156	0.01μF 50V
C505	9965 100 05173	22μF 20% 25V
C506	9965 000 40156	0.01μF 50V
C507	9965 100 05173	22μF 20% 25V
C508	9965 000 41119	22μF 20% 250V
C509	9965 000 40156	0.01μF 50V
C510	9965 100 05173	22μF 20% 25V
C511	9965 000 40156	0.01μF 50V
C512	9965 100 05173	22μF 20% 25V
C513	9965 000 40156	0.01μF 50V
C514	9965 100 05173	22μF 20% 25V
C515	9965 000 41106	0.0022μF 2kV
C517	9965 000 41096	10pF 50V
C519	9965 000 41096	10pF 50V
C521	9965 000 41096	10pF 50V
C523	9965 000 40157	0.1μF 50V
C524	9965 000 41101	560pF 500V
C525	9965 000 40156	0.01μF 50V
C526	9965 000 41149	0.22μF 5% 250V
C528	9965 000 40157	0.1μF 50V
C529	9965 000 41119	22μF 20% 250V
C530	9965 000 41106	0.0022μF 2kV
C531	9965 000 40185	10μF 20% 250V
C532	9965 000 41149	0.22μF 5% 250V
C533	9965 000 41101	560pF 500V
C534	9965 000 40156	0.01μF 50V
C535	9965 000 41149	0.22μF 5% 250V
C537	9965 000 40157	0.1μF 50V
C538	9965 000 41101	560pF 500V
C539	9965 000 41149	0.22μF 5% 250V
C540	9965 000 40156	0.01μF 50V
C541	9965 000 41113	100μF 20% 25V
C542	9965 000 41113	100μF 20% 25V
C601	9965 000 40217	0.22μF 250V - 500V
C602	9965 000 41164	0.47μF 250V
C603	9965 000 41164	0.47μF 250V
C605	9965 000 40538	0.0047μF 2kV
C607	9965 000 40538	0.0047μF 2kV
C608	9965 000 40567	0.1μF A C250V-500V
C609	9965 000 40564	220μF
C610	9965 100 05169	0.0022μF 10% 1kV
C611	9965 000 40179	10μF 20% 50V-63V
C612	9965 000 40186	0.1μF 10% 63-100V
C613	9965 000 41105	CerCap 0.001mF 2kV
C614	9965 000 40178	1μF 20% 50V
C615	9965 000 40163	220pF 500V
C616	9965 000 41098	0.0015μF 50V
C617	9965 000 41162	470pF 20% 400VAC
C618	9965 000 41162	470pF 20% 400VAC
C619	9965 000 41163	0.0022μF 20% 250V
C620	9965 000 40157	0.1μF 50V
C621	9965 000 40174	220μF 20% 16V
C622	9965 000 40172	100μF 20% 16V
C623	9965 000 40171	10μF 20% 16V
C624	9965 000 40166	680pF 500V
C625	9965 000 40544	1000μF 20% 25V
C626	9965 000 40156	0.01μF 50V
C627	9965 000 40541	2200μF
C628	9965 000 40163	220pF 500V
C629	9965 000 40156	0.01μF 50V
C630	9965 000 41110	EiCap 2200μF 20% 16V
C631	9965 000 40156	0.01μF 50V
C632	9965 000 40163	220pF 500V
C633	9965 000 40163	220pF 500V
C634	9965 100 05171	EC
C635	9965 000 41107	CerCap 680pF 2kV
C636	9965 000 40156	0.01μF 50V
C637	9965 000 40533	CerCap 0.01μF 500V
C638	9965 000 41118	EiCap 220μF
C639	9965 100 05184	EC
C640	9965 000 40547	100μF 20% 50V

C641	9965 000 40544	1000μF 20% 25V
C642	9965 000 40173	1000μF
C643	9965 000 40157	0.1μF 50V
C644	9965 000 40176	470μF 20% 16V
C645	9965 000 40157	0.1μF 50V
C646	9965 000 40176	470μF 20% 16V
C647	9965 000 40157	0.1μF 50V
C648	9965 000 40156	0.01μF 50V
C649	9965 000 40543	330μF 20% 16V
C650	9965 000 40157	0.1μF 50V
C651	9965 000 40176	470μF 20% 16V
C652	9965 000 40172	100μF 20% 16V
C653	9965 000 41146	0.33μF 10% 63-100V
C654	9965 000 40173	1000μF
C656	9965 000 40209	Mylar 0.0022μF 100V
C660	9965 000 40186	0.1μF 10% 63-100V
C701	9965 100 05183	0.3pF 63V +/-0.25pF
C702	9965 000 40180	2.2μF 20% 50V
C703	9965 000 40546	47μF 20% 25V
C704	9965 000 41097	100pF 50V
C705	9965 000 41097	100pF 50V
C706	9965 000 41100	0.0047μF 500V
C707	9965 000 40212	Mylar 0.0047μF 100V
C708	9965 000 40547	100μF 20% 50V
C709	9965 000 40172	100μF 20% 16V
C710	9965 000 40185	10μF 20% 250V
C711	9965 000 40185	10μF 20% 250V
CN102	9965 000 41122	0.47μF
CN104	9965 000 41122	0.47μF
CN107	9965 000 41122	0.47μF
CN108	9965 000 41122	0.47μF
CN110	9965 000 41120	0.22μF
CN111	9965 000 41120	0.22μF
CN112	9965 000 41120	0.22μF
CN113	9965 000 41120	0.22μF
CN114	9965 000 41120	0.22μF
CN115	9965 000 41120	0.22μF
CN116	9965 000 41133	0.01μF 10% 50V
CN117	9965 000 41133	0.01μF 10% 50V
CN119	9965 000 41134	0.1μF 10% 50V
CN120	9965 000 41134	0.1μF 10% 50V
CN121	9965 000 41134	0.1μF 10% 50V
CN122	9965 000 41134	0.1μF 10% 50V
CN123	9965 000 41134	0.1μF 10% 50V
CN124	9965 000 41134	0.1μF 10% 50V
CN125	9965 000 41134	0.1μF 10% 50V
CN126	9965 000 41134	0.1μF 10% 50V
CN127	9965 000 41134	0.1μF 10% 50V
CN128	9965 000 41134	0.1μF 10% 50V
CN129	9965 000 41134	0.1μF 10% 50V
CN130	9965 000 41134	0.1μF 10% 50V
CN131	9965 000 41135	220pF 5% 50V

IC601	9965 000 41192	STR-W6756 LF2007 Sanken
IC602	9965 000 40592	SE140N Sanken
IC603	9965 000 40601	PC817C Sharp
IC604	9965 000 40599	L7805CV SGS
IC605	9965 000 40599	L7805CV SGS
IC606	9965 000 40599	L7805CV SGS
IC607	9965 000 40247	L7808CV
IC608	9965 000 40599	L7805CV SGS
Q301	9965 000 40232	2SC1815Y/2PC1815
Q302	9965 000 41184	KTC2026
Q303	9965 100 05187	2SC5859
Q304	9965 000 40232	2SC1815Y/2PC1815
Q305	9965 000 41191	FQPF630
Q380	9965 000 41189	2SC1815Y
Q381	9965 000 41189	2SC1815Y
Q382	9965 000 40231	2SA1015Y2PA1015
Q383	9965 000 40231	2SA1015Y2PA1015
Q384	9965 000 41189	2SC1815Y
Q385	9965 000 41189	2SC1815Y
Q401	9965 000 40232	2SC1815Y/2PC1815
Q501	9965 000 40232	2SC1815Y/2PC1815
Q502	9965 000 40232	2SC1815Y/2PC1815
Q503	9965 000 40231	2SA1015Y2PA1015
Q504	9965 000 40231	2SA1015Y2PA1015
Q505	9965 000 40232	2SC1815Y/2PC1815
Q506	9965 000 40232	2SC1815Y/2PC1815
Q507	9965 000 40231	2SA1015Y2PA1015
Q508	9965 000 40231	2SA1015Y2PA1015
Q509	9965 000 40232	2SC1815Y/2PC1815
Q510	9965 000 40232	2SC1815Y/2PC1815
Q511	9965 000 40231	2SA1015Y2PA1015
Q512	9965 000 40231	2SA1015Y2PA1015
Q513	9965 000 40231	2SA1015Y2PA1015
Q514	9965 000 41181	2SA1480
Q601	9965 000 40232	2SC1815Y/2PC1815
Q602	9965 000 40583	2SC2230Y/3DG2230Y
Q603	9965 000 40587	2SA1930 TOSHIBA
Q604	9965 000 40231	2SA1015Y2PA1015
Q701	9965 000 40232	2SC1815Y/2PC1815
Q702	9965 000 40232	2SC1815Y/2PC1815
Q703	9965 000 40232	2SC1815Y/2PC1815
Q704	9965 000 40232	2SC1815Y/2PC1815
Q705	9965 000 40231	2SA1015Y2PA1015
Q706	9965 000 41182	2SA1837 PA
Q707	9965 000 41186	2SC4793 PA
QN106	9965 000 41188	SST3906MMBT3906PM
QN500	9965 000 41188	SST3906MMBT3906PM
QN501	9965 000 41188	SST3906MMBT3906PM
QN502	9965 000 41188	SST3906MMBT3906PM
QN503	9965 000 41188	SST3906MMBT3906PM
QN504	9965 000 41188	SST3906MMBT3906PM
QN505	9965 000 41187	SST3904MMBT3904PM
QN801	9965 000 41187	SST3904MMBT3904PM
QN802	9965 000 41187	SST3904MMBT3904PM
QN901	9965 000 41185	BC327 PNP
QN902	9965 000 41185	BC327 PNP
QN903	9965 000 41183	BC547 NPN
QN904	9965 000 41183	BC547 NPN
BR605	9965 000 41180	Bridge Rec.Diode KBJ6J
G501	9965 000 41223	CRT Sckt GZS10-301-2F
GST601	9965 000 40274	Surge Abs. 300V 30%
UN101	9965 000 41194	TDA12063H/N1F00
UN103	9965 000 41200	CP1117E33 ANAChip
UN300	9965 000 41202	PW1233L Pixelwork
UN301	9965 000 41203	M12L64164A-7T
UN302	9965 000 41201	CP1117E18LA ANAChip
UN303	9965 000 41201	CP1117E18LA ANAChip
UN304	9965 000 41200	CP1117E33 ANAChip
UN400	9965 000 41200	CP1117E33 ANAChip
UN403	9965 000 41197	TDA8759
UN404	9965 000 41201	CP1117E18LA ANAChip
UN405	9965 000 41201	CP1117E18LA ANAChip
UN500	9965 000 41196	OM8380H
UN800	9965 100 05189	M37161M8H RENESAS
V203	9965 000 40232	2SC1815Y/2PC1815
V204	9965 000 40232	2SC1815Y/2PC1815
V205	9965 000 40232	2SC1815Y/2PC1815
V206	9965 000 40232	2SC1815Y/2PC1815
V207	9965 000 40232	2SC1815Y/2PC1815
V208	9965 100 05188	Trans. FQPF630
V209	9965 100 05188	Trans. FQPF630

11. Revision List

Manual 3122 785 17230

- First release.