



AKAI

**DVD/CD/TUNER/AMPLIFIER
PLAYER**

Model:
DV-R4035VSMC

SERVICE MANUAL

DVD/CD/TUNER/AMPLIFIER PLAYER

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SERVICE MANUAL

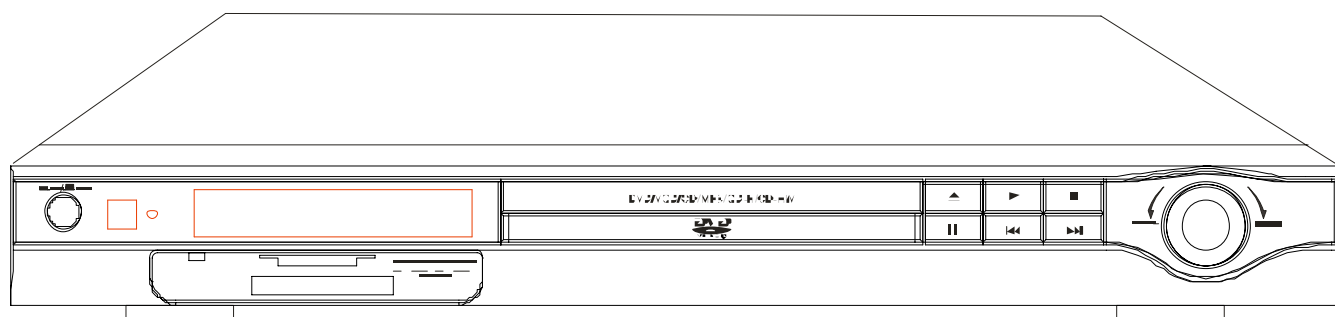


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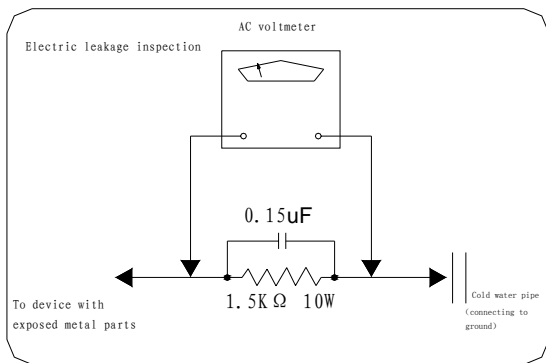
Safety information

General guide

1. Observe the original circuit during maintenance. If short circuit occurs, change the over-hot or damaged components.
2. Observe all the protective device after maintenance, such as whether the shielding cover or paper is assembled well.
3. To avoid electric shock, please inspect electricity leakage after maintenance

Low zeta potential leaking inspection

1. Take out AC cord and connect a piece of wire between two legs of the outlet.
2. Use Gear R x 10K of the voltmeter to measure the spares on AC outlet and exposed metallic part with short circuit. The resistance between screw cap, control shaft should be unlimited.



Picture1

High zeta potential leakage inspection

- .As illustrated 1, Connect Resistor with 1.5K, 10W and capacitor 0.15 between exposed metallic part and device of fine connection to the earth (water pipe etc.).
2. Plug-in AC cord directly to AC outlet. Do not inspect with shield adaptor.
 3. Utilize 1000 or more sensitive voltmeter to measure alternating voltage.
 4. Turn back the AC plug-in from AC outlet then iterate the inspection as above.
 5. Inspect the voltage of the resistor between other exposed metallic parts and the earth with the same way.
 6. The voltage must not be over than 0.75Vrms at any points on the resistor. Electric leakage should not be over 0.5mA when processing high voltage leakage testing through prevent ed static of keenness (ES) setting is exposed to static

of discharge of distortion (ESD) exceeded the restrained figure, electric shock should be possibly suffered. Do maintain the unit and inspect once more before return to the user.

Device avoiding ES influence of ESD.

Some solid semi-conductor devices are easy to be damaged by static electricity. These devices are generally called ES device. The typical devices are IC, field effect component and semi-conductor laser diode.

The following technology helps to abate the danger of ESD on body before handle any semi-conductor or semi-conductor component. Or wear the ESD bangle availed from the market to eliminate the threaten of static electricity on human body.

2. Put the electronic parts with ES device on the surface of conductor such as aluminium foil after take them out in order to protect static electricity from accumulation and explosion.
3. Solder or disassemble ES device through iron connecting the earth.
4. Utilize device only anti-static electricity to disassemble soldering tin. Non-anti static electricity device (ESC protection) will release ES that damage ES device.
5. Do not use chemical volatile releasing static electricity that leads to damage ES device
6. Unless preparation for pre-assembling has been made, do not take out the ES device to be changed from the protective packings(most of the changed ES devices are packed together with anti-static electrical foam or similar electric material, besides, countermeasures for down-lead short circuit are taken.).
7. Protective material should connect the model or the circuit component to be assembled in it before taking out the protective material from the ES device.
Note: do not bear electricity to the model or the circuit, and pay attention to all the other safety information.
8. When disassembling and replacing the ES device, try to reduce body movement (Or, the movement of legs, the friction of fibrous of clothes, or elevating the legs from the floor will generate static electricity ESD, causing damage to the ES device.)

Electric Specification

MW electric index

Model No.: DVP-0601-1

Test condition:

1. Supply voltage: AC230V 50Hz
2. Standard power output: 1W
3. Speaker impedance: $4\ \Omega$ (FL、FR、SL、SR), $8\ \Omega$ (C), $6\ \Omega$ (SW)
4. Standard modulating: 400Hz 30%

| No. | Test items | | Unit | Standard | Limit | error |
|-----|---|--|-----------|----------|-----------|-------|
| 1 | Intermediate frequency | | KHz | 450 | | +/-3 |
| 2 | Cover with area | | KHz | 522-1620 | | +/-5 |
| 4 | Utility delicacy | S/N 20dB, 612KHz | μ V/M | 600 | 3000 | |
| | | S/N 20dB, 999KHz | μ V/M | 600 | 3000 | |
| | | S/N 20dB, 1395KHz | μ V/M | 600 | 3000 | |
| 5 | S/N ratio (999 KHz, input 5mV/M) | | dB | 40 | 30 | |
| 6 | Intermediate Frequency restrain rate (612KHz) | | dB | 45 | 35 | |
| 7 | Mirror restrain rate (1404KHz) | | dB | 35 | 30 | |
| 8 | Auto plus control (input 100mV/M) | | dB | 30 | 20 | |
| 9 | Distortion degree | 5mV/M input, 30% | % | 1 | 3 | |
| | | 100mV/M input, 80% | % | 3 | 5 | |
| 10 | -6dB bandwidth (20dB S/N) | | KHz | 8 | 5-10 | |
| 11 | zip (input 5mV/M, IFx1 IFx2) | | % | 3 | 10 | |
| 12 | Output power | Volume max | W | | | |
| | | Distortion degree: 10%, 60% modulation degree, input 5mV/M | W | 4.5 | 3 | |
| 13 | +/-10KHz selectivity (1000KHz 20dB S/N) | | dB | 14 | 8 | |
| 14 | Frequency respond (-6 dB, input 5mV/M) | | Hz | 40~4K | 100~3.15K | |
| 15 | Modulating AC volume (input 100mV/M) | | dB | 40 | 35 | |
| 16 | The least noise | | mV | 1 | 3 | |
| 17 | Sensitivity of station locking | | dB | | ≤ 90 | |
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FM electric index

Model No.: DVP-0601-1

Test condition:

1. Supply voltage: AC230V 50Hz
2. Standard output power: 1W
3. Antenna impedance: 75 Ω
4. Standard modulating: 1KHz 22.5KHz
5. Speaker impedance: 4 Ω (FL、FR、SL、SR), 8 Ω (C), 6 Ω (SW)

| No. | Test items | Unit | Standard | Limit | Error | |
|-----|--|------------------|----------|-----------|--------|--|
| 1 | Intermediate frequency | MHz | 10.7 | | +/-0.1 | |
| 2 | Cover with area | MHz | 87.5-108 | | +/-0.1 | |
| 3 | Utility delicacy | S/N 30dB, 90MHz | dB | 22 | 26 | |
| | | S/N 30dB, 98MHz | dB | 22 | 26 | |
| | | S/N 30dB, 106MHz | dB | 22 | 26 | |
| 4 | S/N ratio (98MHz, input 1mV) | dB | 50 | 34 | | |
| 5 | -3dB limit delicacy | uV | 10 | 20 | | |
| 6 | Intermediate Frequency Restrain Rate (90MHz) | dB | 50 | 45 | | |
| 7 | Mirror Restrain Rate (106MHz) | dB | 28 | 22 | | |
| 8 | Distortion degree (1mV input) | % | 0.6 | 1.5 | | |
| 9 | Modulating AC volume (input 5mV) | dB | 50 | 40 | | |
| 10 | Auto frequency control range (1mV input, -3dB) | KHz | | | | |
| 11 | AM restrain (1mv input, modulate degree 30%) | dB | 32 | 26 | | |
| 12 | Power output (distortion degree 10%, 60KHz, 1mv input) | W | 10 | | | |
| 13 | Frequency response (-3dB) | Hz | 40~12.5K | 100~8K | | |
| 14 | Noise of minimum volume | mV | 1 | 3 | | |
| 15 | Sensitivity of station locking | dB | | ≤ 35 | | |
| 16 | Passage separating | dB | 25 | ≥ 20 | | |
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1: Video section

| No. | Test item | | Test point | Performance require | Unit | Remark | |
|-----|---------------------------|--------------------------|------------|---------------------|------------|------------|----------|
| 1 | Video | | | 1.0±0.2 | Vp-p | | |
| 2 | output range | S-Video | Y | 0.7±0.14 | Vp-p | | |
| | | | C | Chroma | 0.88±0.176 | Vp-p | |
| | | Color synchronization | | 0.3±0.06 | Vp-p | | |
| 3 | Y、Cr、Cb/Y、Pr、Pb | | | 0.7+/-0.14 | Vp-p | | |
| 4 | R、G、B | | | 0.7+/-0.14 | Vp-p | | |
| 5 | Horizontal distinguish | | | ≥500 | Line | | |
| 6 | Bandwidth (+3/-6dB) | | | ≥5.5 | MHz | 100KHz 0dB | |
| 7 | Differential phase DP | | | ≤2 | degree | 75Ω load | |
| 8 | Lum Non-Linear Distortion | | | ≤5 | % | 75Ω load | |
| 9 | Differential Gain DG | | | ≤2 | % | 75Ω load | |
| 10 | SNR | | Y | ≥56 | dB | 75Ω load | |
| 11 | | | C | U passage | ≥50 | dB | 75Ω load |
| | | | | V passage | ≥50 | dB | 75Ω load |
| 12 | | | R | R passage | ≥50 | dB | 75Ω load |
| | | | G | G passage | ≥50 | dB | 75Ω load |
| | B | B passage | ≥50 | dB | 75Ω load | | |

2: Audio section (testing signals: TCD-784)

| No. | Test item | Test point | Performance require | Unit | Remark |
|-----|--------------------------------|------------|---------------------|------|---------------------|
| 1 | Audio output level | | 1.8+0.2/-0.8 | Vrms | DVD(LPCM)、CD |
| 2 | Amplitude/Frequency response | | ±2 | dB | DVD(LPCM)20Hz~20KHz |
| 3 | S/N ratio | | ≥85 | dB | JIS-A (20KHz LPF) |
| 4 | Distortion THD | | 0.02 | % | 1KHz JIS-A |
| 5 | Dynamic range | | 90 | dB | 1KHz JIS-A |
| 6 | Separate degree | | 65 | dB | 1KHz JIS-A |
| 7 | Passage imbalance | | ≤1.5 | dB | DVD(LPCM)、CD |
| 8 | Coaxial output range | | 0.5±20% | Vp-p | 75Ω±1% load |
| 9 | Optical output wavelength (λp) | | 660±30 | nm | |

3: Other characteristics

| No. | Test item | Test point | Performance require | Unit | Remark |
|-----|-------------------------|---|---|------|----------------|
| 1 | Disc reading time | | 10~20 | S | |
| 2 | Remote control distance | | ≥5 | m | |
| 3 | Supply voltage input | | 230V(-10%/+10%) | | 50Hz |
| 4 | Consume power | | 110 | W | Normal working |
| 5 | Storing temperature | | -20℃~+55℃ | | |
| 6 | Image signal system | | NTSC/PAL | | |
| 7 | Free falling | | Suitable for request of GB/T2423.8-1995 | | |
| 8 | Disc format | 1)DVD Player: 12cm single face, single layer; 12cm single face, double layer; 8cm single face, single layer; 8cm single face, double layer; (2) CD disc: 12cm disc, 8cm disc. | | | |

4: Test condition

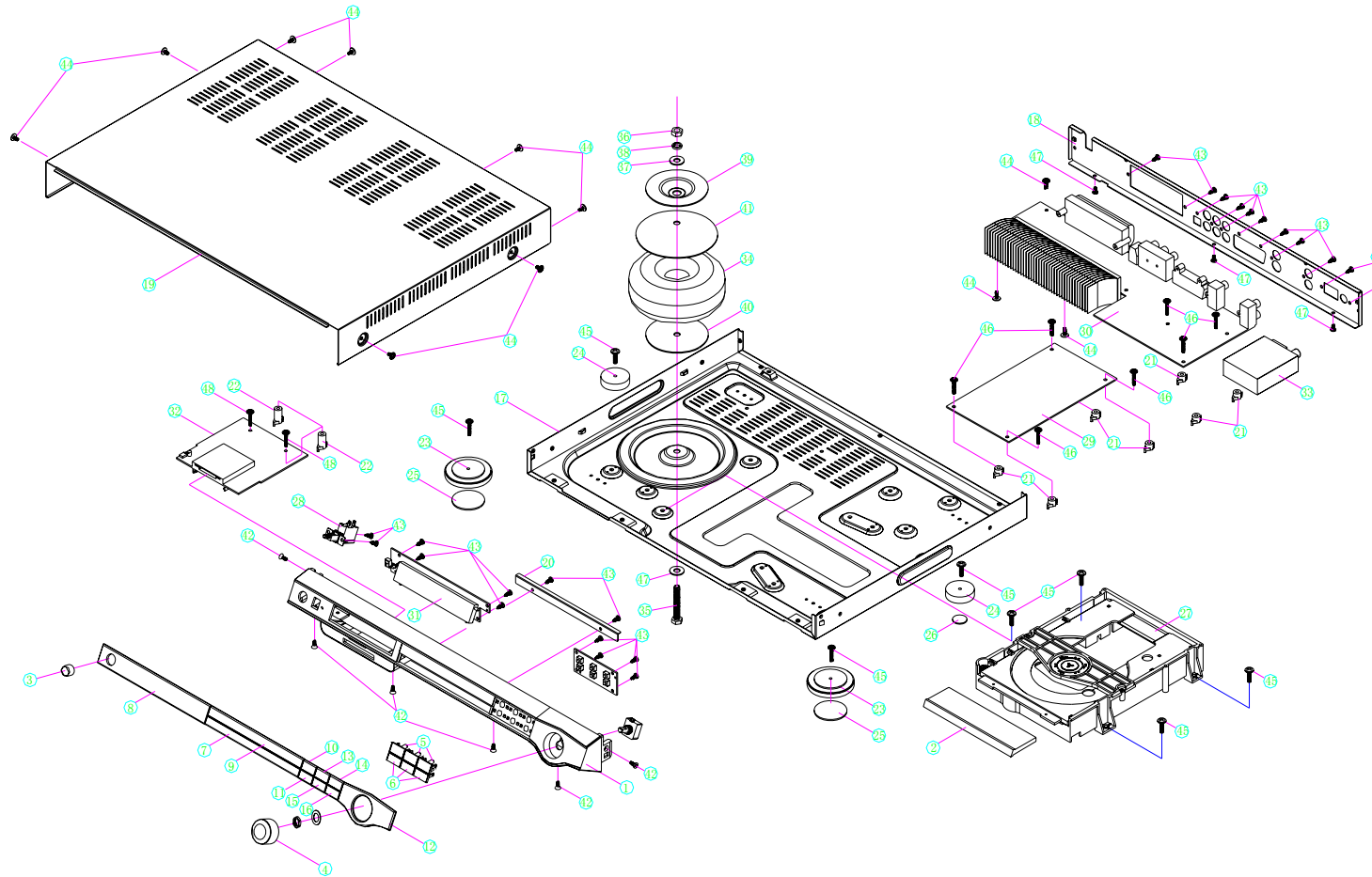
1. Environment condition: normal temperature, normal voltage.
2. Supply voltage: AC230V 50Hz.

| No. | Test item | Unit | Typical | Limit | Test condition |
|----------------------------|--|------------------|-------------|-------------|---------------------------|
| Power supply | | | | | |
| 1 | Voltage input | V _{AC} | 230±10% | | |
| 2 | Rated output voltage & current | | +5V 1.3A | +5V 1.5A | |
| | | | +12V 150mA | +12V 200mA | |
| | | | -12V 50mA | -12V 100mA | |
| | | | +22V 3.5A | +25V 3.5A | |
| | | | ~3.7V 100mA | ~3.7V 120mA | |
| | | | -24V 50mA | -24V 50mA | |
| 3 | Output power | W | 110 | | Voltage input AC230±10% V |
| 4 | +5 wavelength output | mV | <50 | | |
| 4 | Power modulating (+5V point) | % | 5 | | Voltage input AC230±10% V |
| 6 | Load modulating (+5V point) | % | 5 | | Current 10mA-1.5A |
| 7 | Standby power | W | ≤10 | | |
| Amplifier section | | | | | |
| 1 | Working voltage | V | +22 | +26 | Rated load |
| 2 | Static current | mA | 180 | 300 | |
| 3 | Rated load (FR/FL/SR/SL) | Ω | 4 | | |
| 4 | Rated load (C/SW) | Ω | 8 | | |
| 5 | Rated output power (FR/FL/SR/SL) | W | 12.5 | | THD=10% RL=4Ω |
| 6 | Maximum output power (FR/FL/SR/SL) | W | ≧16 | ≧18 | Maximum volume RL=4Ω |
| 7 | Rated output power (C) | W | 15 | | THD=10% RL=8Ω |
| 8 | Maximum output power (C) | W | ≧20 | ≧25 | Maximum volume RL=8Ω |
| 9 | Rated output power (SW) | W | 25 | | THD=10% RL=6Ω |
| 10 | Maximum output power (SW) | W | ≧30 | ≧35 | Maximum volume RL=6Ω |
| 11 | Band distortion (FR/FL/SR/SL/C) | % | 0.25 | | Rated load; PO=1W;f=1KHz |
| 12 | Band distortion (SW) | % | 0.25 | | Rated load; PO=1W;f=100Hz |
| 13 | Channel output mix | dB | 55 | | f=1KHz |
| 14 | Channel output mix | dB | 55 | | f=10KHz |
| 15 | S/N | dB | >75 | | JIS-A |
| 16 | Amplitude/Frequency response L/R/C/SL/SR | dB | +/-2 | +/-3 | 50Hz~20KHz |
| 17 | Amplitude/Frequency response SW | dB | +/-2 | +/-3 | 20Hz~200Hz |
| Audio input, output | | | | | |
| 1 | Circuit level output | V _{RMS} | 1.5±20% | | |
| 2 | Circuit S/N rate output | dB | 90 | 85 | |
| 3 | Circuit level input | V _{RMS} | 1.5±0.5 | | |
| 4 | Circuit impedance input | Ω | 10K±10% | | |

Test condition

1. Test condition: Normal temperature, Normal voltage
2. Supply voltage: AC230V 50Hz。

Mechanical diagram

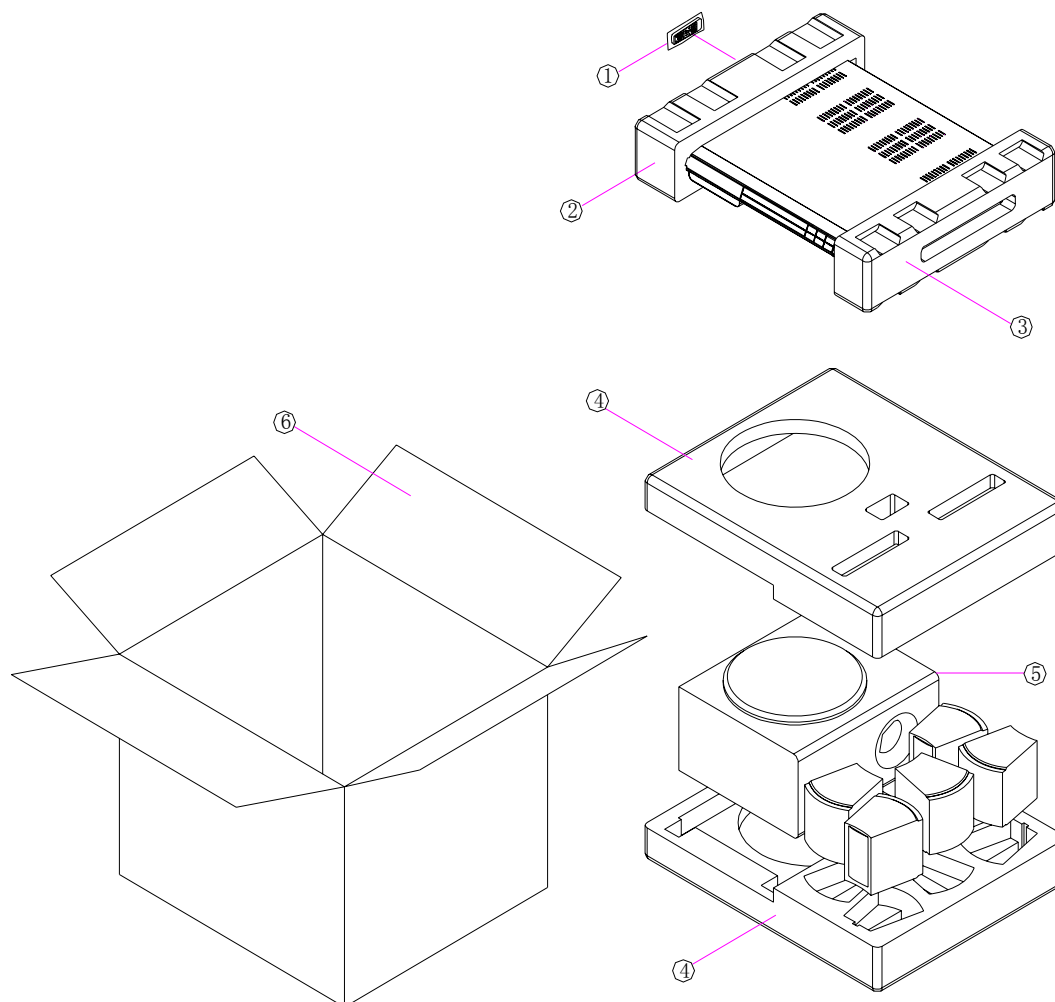


Mechanical parts list

| No. | Material No. | Name | QTY | Remark |
|-----|--------------|--|-----|---|
| 1 | Q1-060123-12 | Panel(with card reader) | 1 | |
| 2 | Q1-0601D2-00 | decoration board | 1 | |
| 3 | Y1-0601I4-00 | Power button | 1 | |
| 4 | Y1-0601G4-00 | Volume button | 1 | |
| 5 | Y1-0601D4-02 | Function button(up) | 3 | |
| 6 | Y1-0601D4-03 | Function button(down) | 3 | |
| 7 | Y9-06012C-20 | Lens | 1 | |
| 8 | Y9-06022C-20 | Lens-A | 1 | |
| 9 | Y9-06012C-2C | Lens-B | 1 | |
| 10 | Y9-06012C-23 | Lens-C | 1 | |
| 11 | Y9-06012C-24 | Lens-D | 1 | |
| 12 | Y9-06012C-25 | Lens-E | 1 | |
| 13 | Y9-06012C-26 | Lens-F | 1 | |
| 14 | Y9-06012C-27 | Lens-G | 1 | |
| 15 | Y9-06022C-21 | Lens-H | 1 | |
| 16 | Y9-06022C-22 | Lens-I | 1 | |
| 17 | Q4-060121-00 | Mother board | 1 | |
| 18 | Q2-060121-13 | Back board | 1 | |
| 19 | Q1-3203A3-00 | Top cover | 1 | |
| 20 | Y3-06016C-10 | Top cover holder | 1 | |
| 21 | Y3-030260-20 | PCB holder (hight 7.0mm) | 7 | |
| 22 | Y3-06016C-20 | PCB holder (height 11.0mm) | 2 | |
| 23 | Y3-130150-20 | Front feet | 2 | |
| 24 | Y3-130151-20 | Rear feet | 2 | |
| 25 | Y3-130150-50 | Front feet mat | 2 | |
| 26 | Y3-130151-50 | Rear feet mat | 2 | |
| 27 | A6-710000-40 | Pick up CMS-S71SG6 | 1 | |
| 28 | S1-404000-00 | Power switch PS4E-A-040 | 1 | |
| 29 | A5-060120-10 | Decoder board | 1 | |
| 30 | A5-060120-20 | Amplifier board | 1 | |
| 31 | A5-060120-40 | Control board | 1 | |
| 32 | A5-370101-80 | Card reader board | 1 | |
| 33 | A8-1E8000-20 | ALPS tuner TFCF1E800A | 1 | |
| 34 | T1-020222-00 | Transformer 230V/110W/VDE | 1 | |
| 35 | N2-603829-79 | bolt H6.0×38.0mm | 1 | |
| 36 | N3-060048-10 | nut M6×4.8mm | 1 | |
| 37 | N0-600103-10 | mat $\phi 6.0 \times 13 \times 1.0$ mm | 2 | |
| 38 | N0-600202-10 | Spring mat $\phi 6.0 \times 2.0$ mm | 1 | |
| 39 | Y3-01018C-10 | Fix piece for transformer $\phi 65 \times 6.5 \times 1.2$ mm | 1 | |
| 40 | N0-700133-20 | rubber mat $\phi 65 \times 7.0 \times 1.3$ mm | 1 | |
| 41 | N0-700133-21 | rubber mat $\phi 80 \times 7.0 \times 1.3$ mm | 1 | |
| 42 | N2-300614-54 | Screw ST3X6KTT Nickel | 6 | Pannel/Mother board |
| 43 | N2-300812-19 | Screw ST3X8PA Nickel | 21 | |
| 44 | N2-300615-54 | Screw ST3×6PWTT Nickel | 11 | |
| 45 | N2-300815-54 | Screw ST3×8PWTT Nickel | 8 | unit feet、loader/mother board |
| 46 | N2-301215-54 | Screw ST3×12PWTT Nickel | 7 | Amplifier board, decoder board/mother board |
| 47 | N2-300612-54 | Screw ST3×6PTT Nickel | 5 | Mother board/rear board, tuner |
| 48 | N2-301612-54 | Screw ST3×16PTT Nickel | 2 | Card reader board/mother board |

Packing and accessories

1. Disassemble



2. Material list

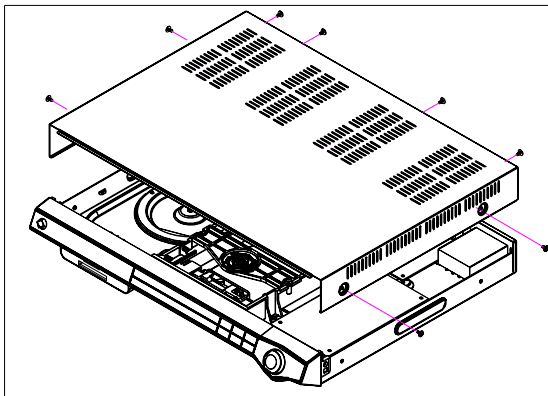
| No. | Material No. | Name | QTY |
|-----|--------------|-------------------------|-----|
| 1 | A1-060120-11 | Remote control | 1 |
| 2 | 07-060120-L0 | Poly foam (left) | 1 |
| 3 | 07-060120-R1 | Poly foam (right) | 1 |
| 4 | 07-060160-S2 | Speaker poly foam | 2 |
| 5 | A3-060120-01 | SPP-0301-0 type speaker | 1 |
| 6 | 06-060127-12 | Gift box (unit+speaker) | 1 |

Disassemble and assemble

The unit comprises mechanical and electric part including: front panel, base panel, top panel, back panel and loader, AV output board, decoder, etc.

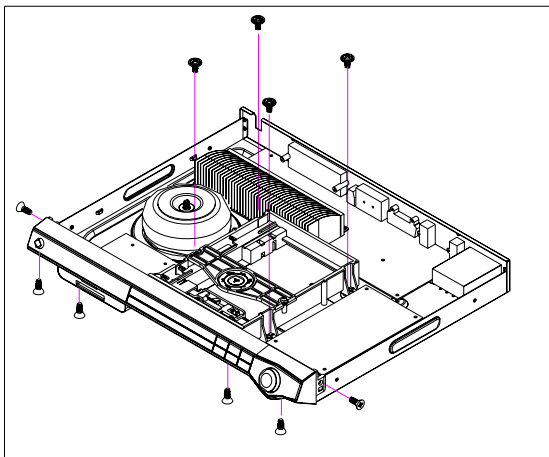
■ Take out disc from trouble player

If you can not take out disc even press OPEN/CLOSE key, please pull power cord from the socket and follow as below: 1. Wring 8 screws out then pull left and right side to take away top panel that rear part is upper (illustrated A)



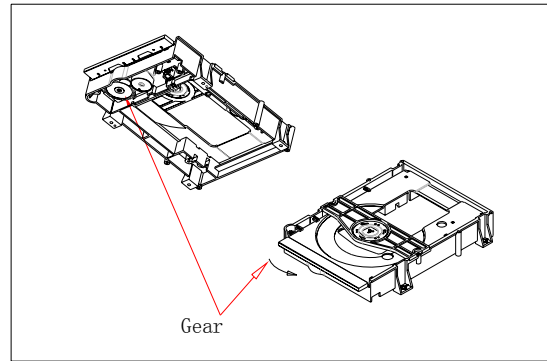
Graph A Dispart cabinet

2. Wring 6 screws out connected base panel with bottom board then wrest 4 screws connected loader with bottom board (illustrated B)

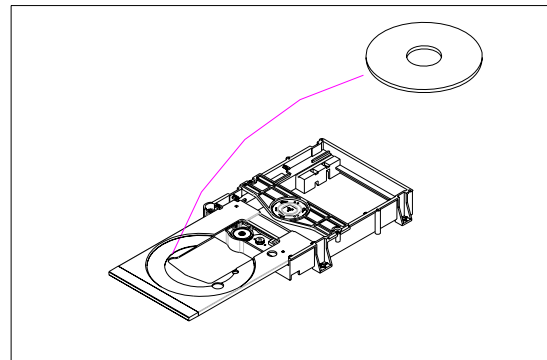


Graph B Dispart front panel and loader

3. Take out front panel and loader carefully, there is one white plastic gear under the loader. Rotate the gear as illustrated C to stretch DVD tray and door (illustrated D), you may take disc out carefully.



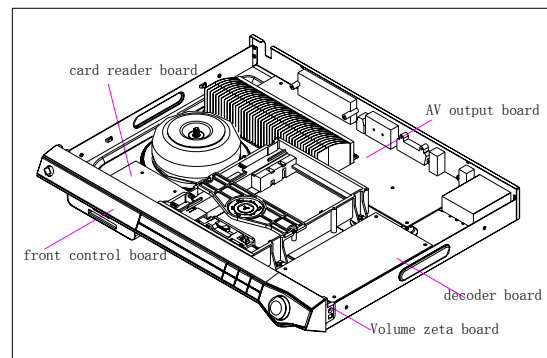
Graph C Rotate white gear



Graph D Take out disc

■ PCB position

All PCB assemblies locate as illustrated H



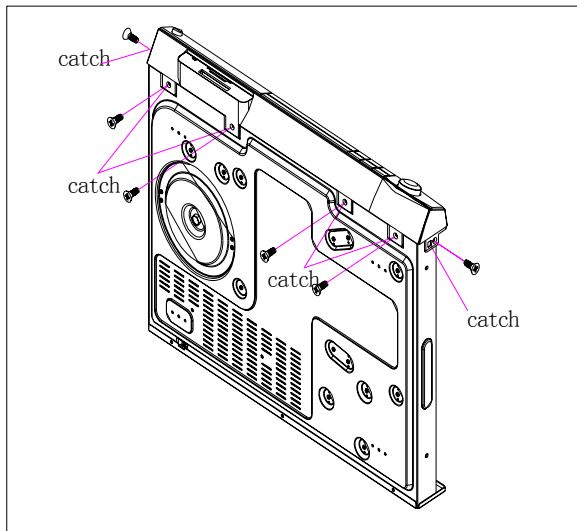
Graph H PCB boards location

Disassemble and assemble parts list

1. Take out top panel
See as illustrated A
2. Take out front panel

■ Able to open the disc tray by electricity

- 2.1 Operate after completely take out top panel
- 2.2 Press OPEN/CLOSE button to open disc tray
Be careful not to damage disc when take it out if it is in the tray.
- 2.3 Press OPEN/CLOSE button to close tray then pull out power plug.
- 2.4 Take out PCB board on front panel and cords connected with other circuit board. Wring out 5 screws connected front panel and bottom panel, untie two catches on left and right side of the panel then take out front panel. (See illustrated E)



Graph E Location of catch on front panel

■ Unable to open the disc tray by electricity

- Unable to open disc tray when press OPEN/CLOSE button
- 2.1 Take out disc as illustrated A, B, C, D.
 - 2.2 Take out front panel

■ Assemble the case

Assemble the case by reversing disassembly.
After maintenance, switching on power on the condition that assembly and connection have no mistake then loader and electric circuit return to original place automatically.
The unit works normally.

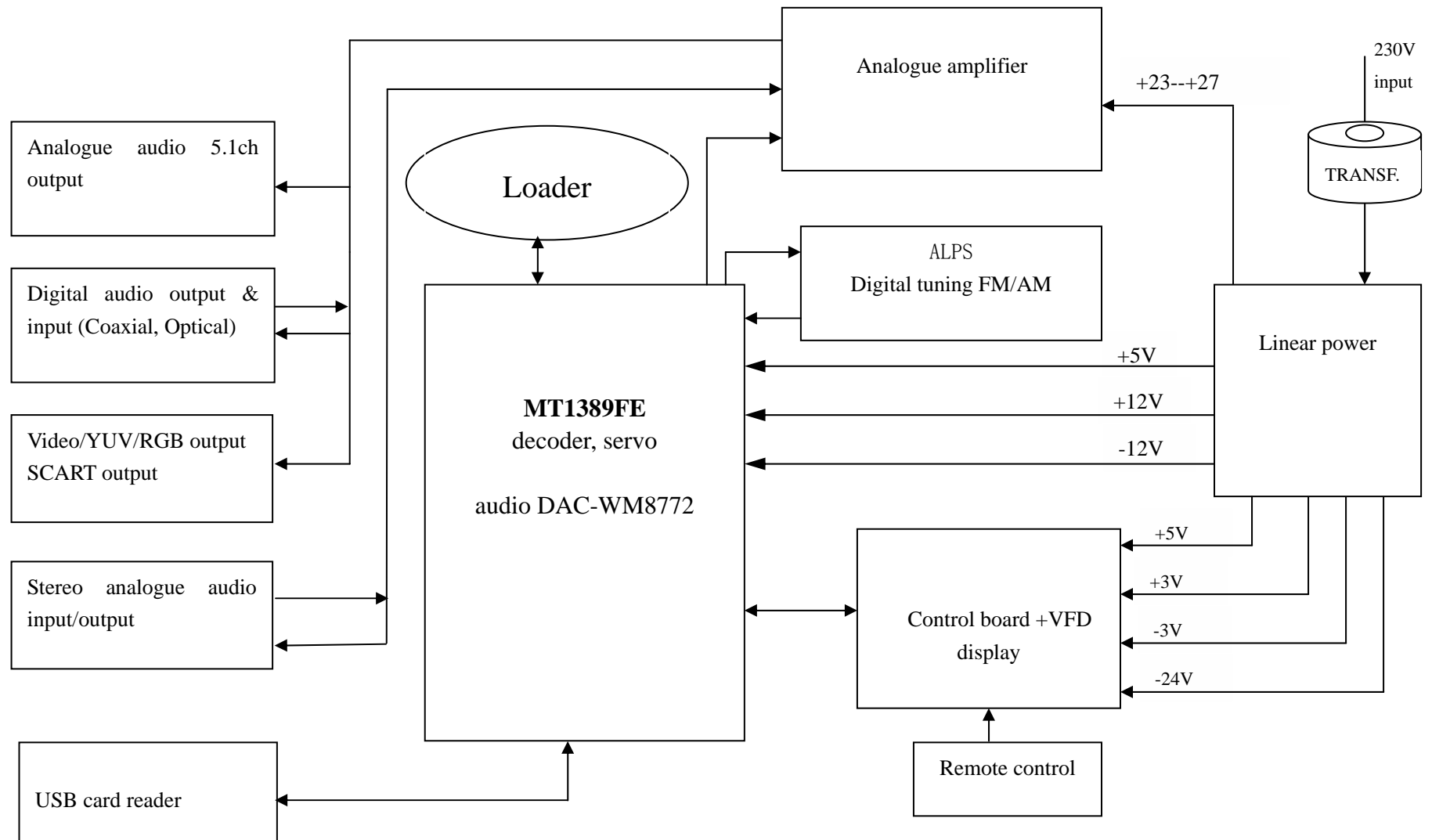
Attachment 1: Block diagram, circuit diagram

Block diagram/ Connecting diagram

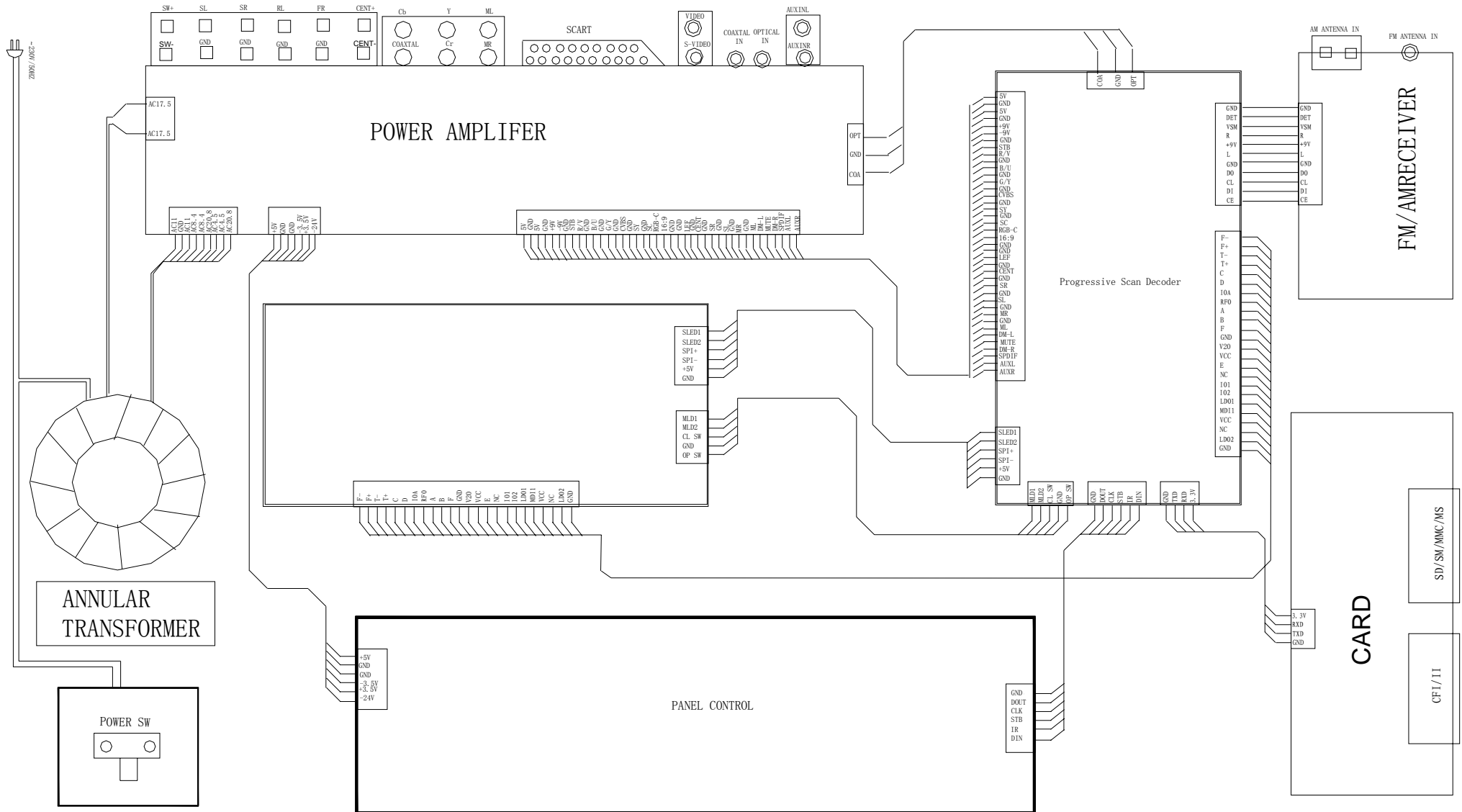
Decoder board diagram

Amplifier board diagram

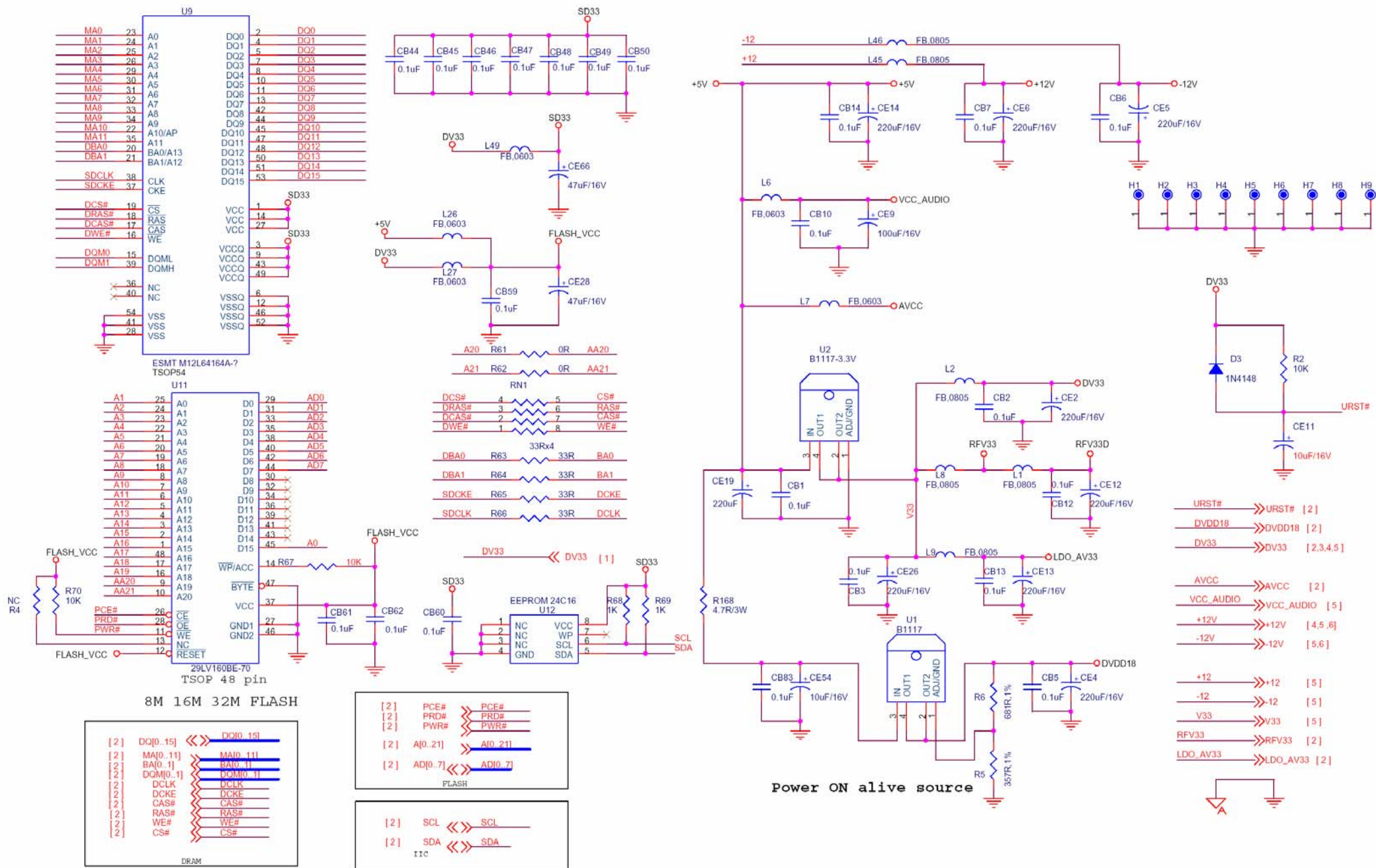
Control board diagram



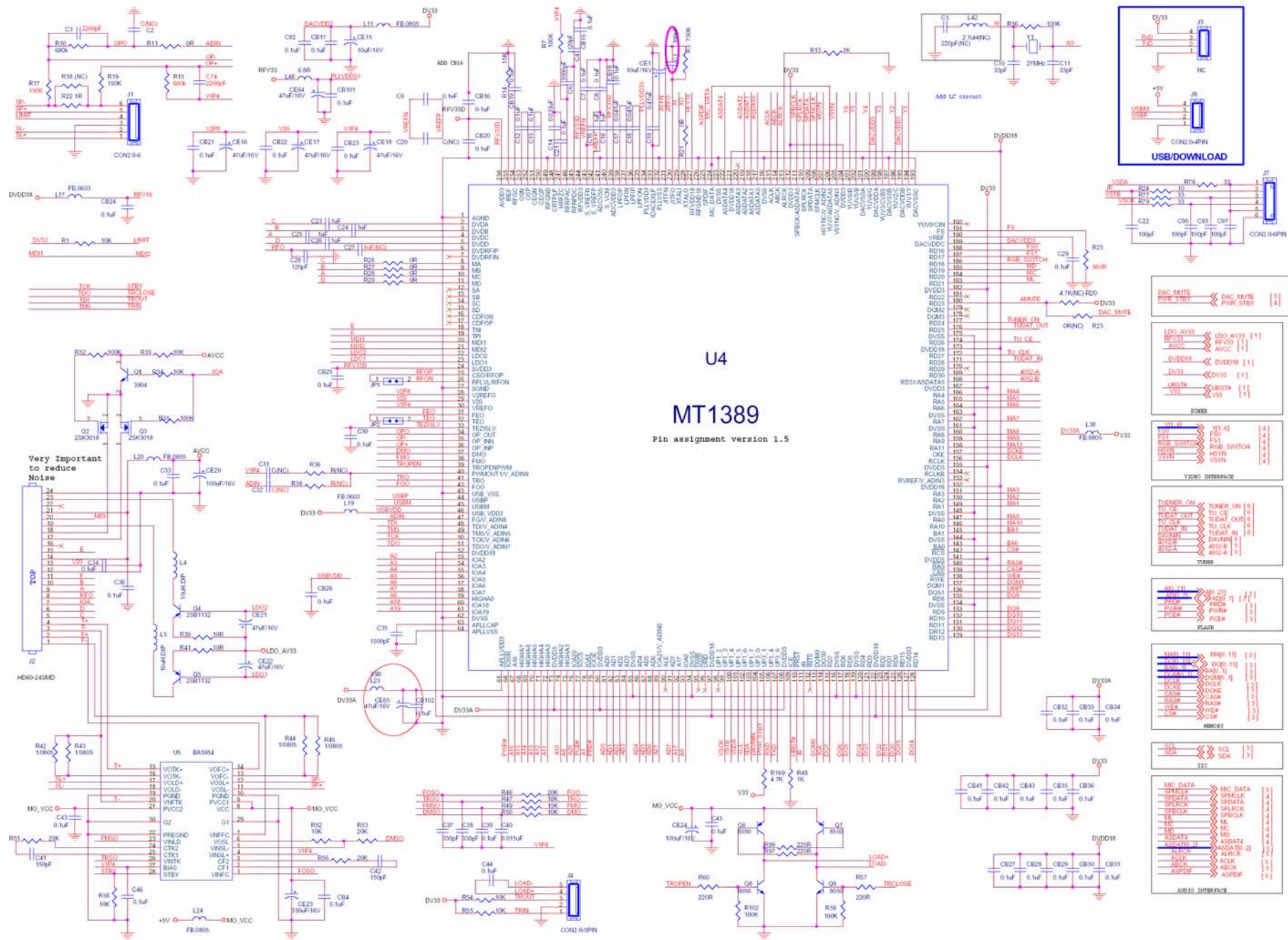
Block diagram
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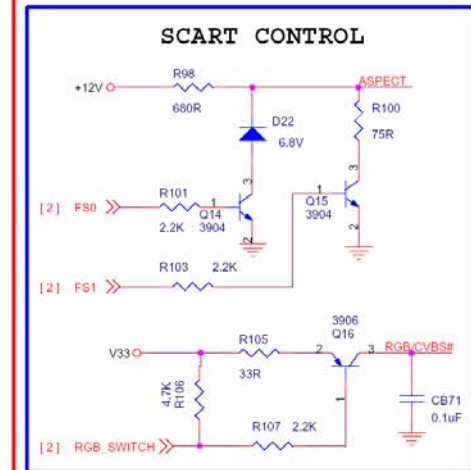
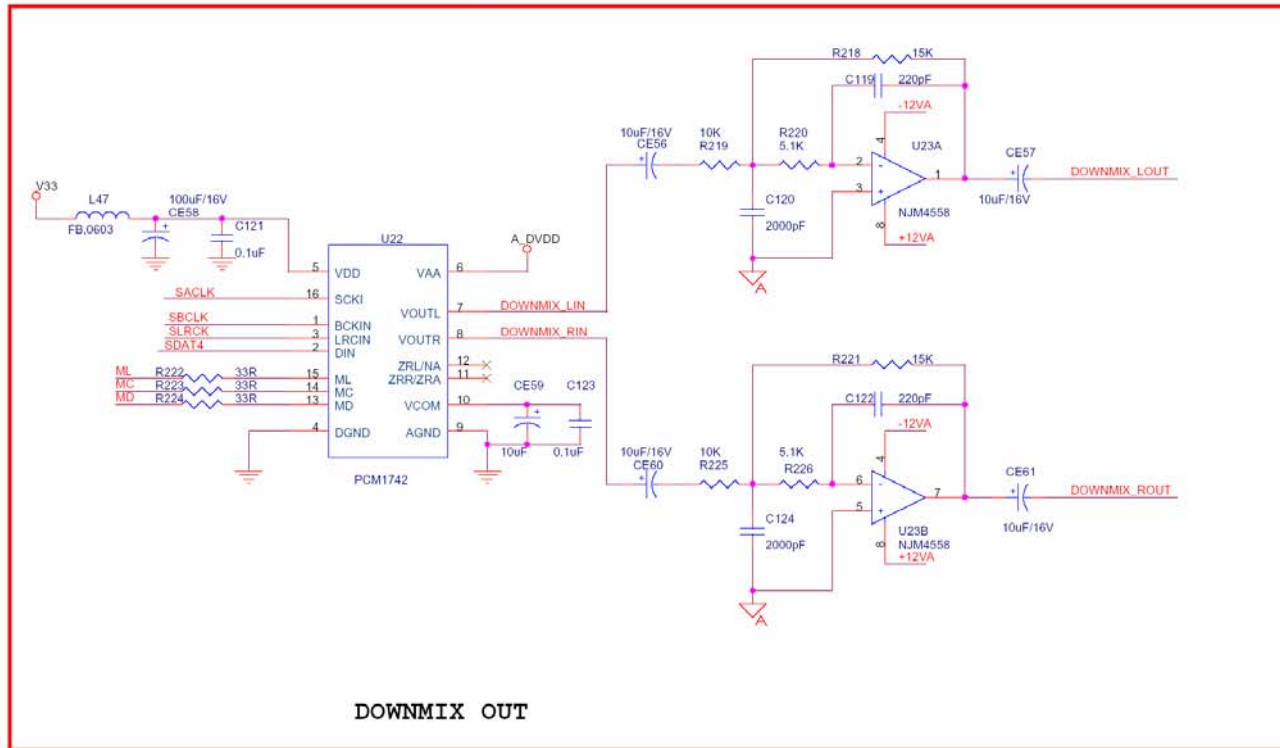
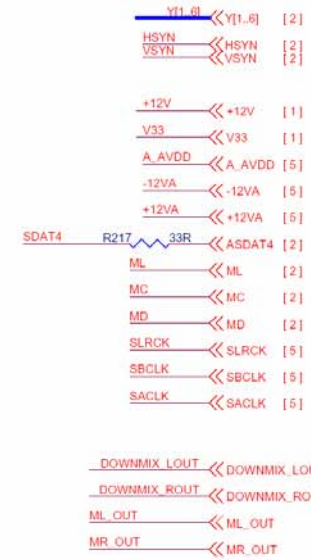
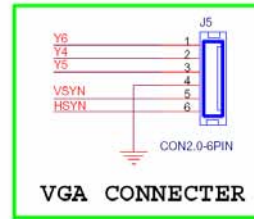
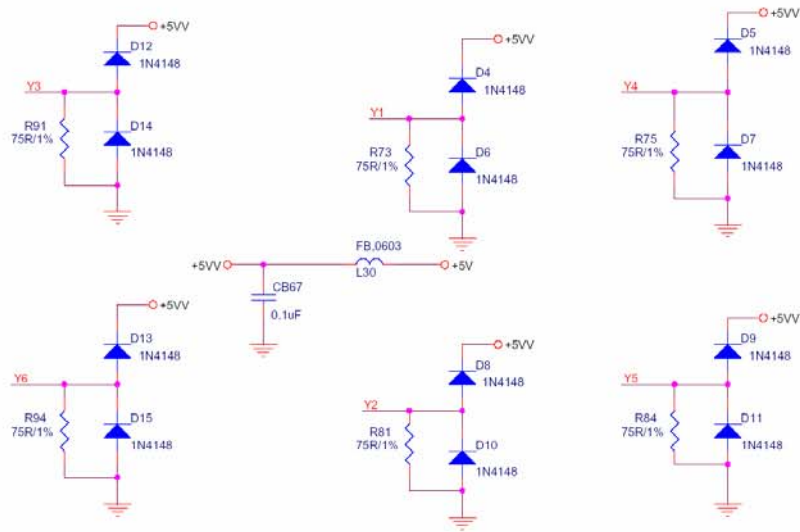
Connecting diagram



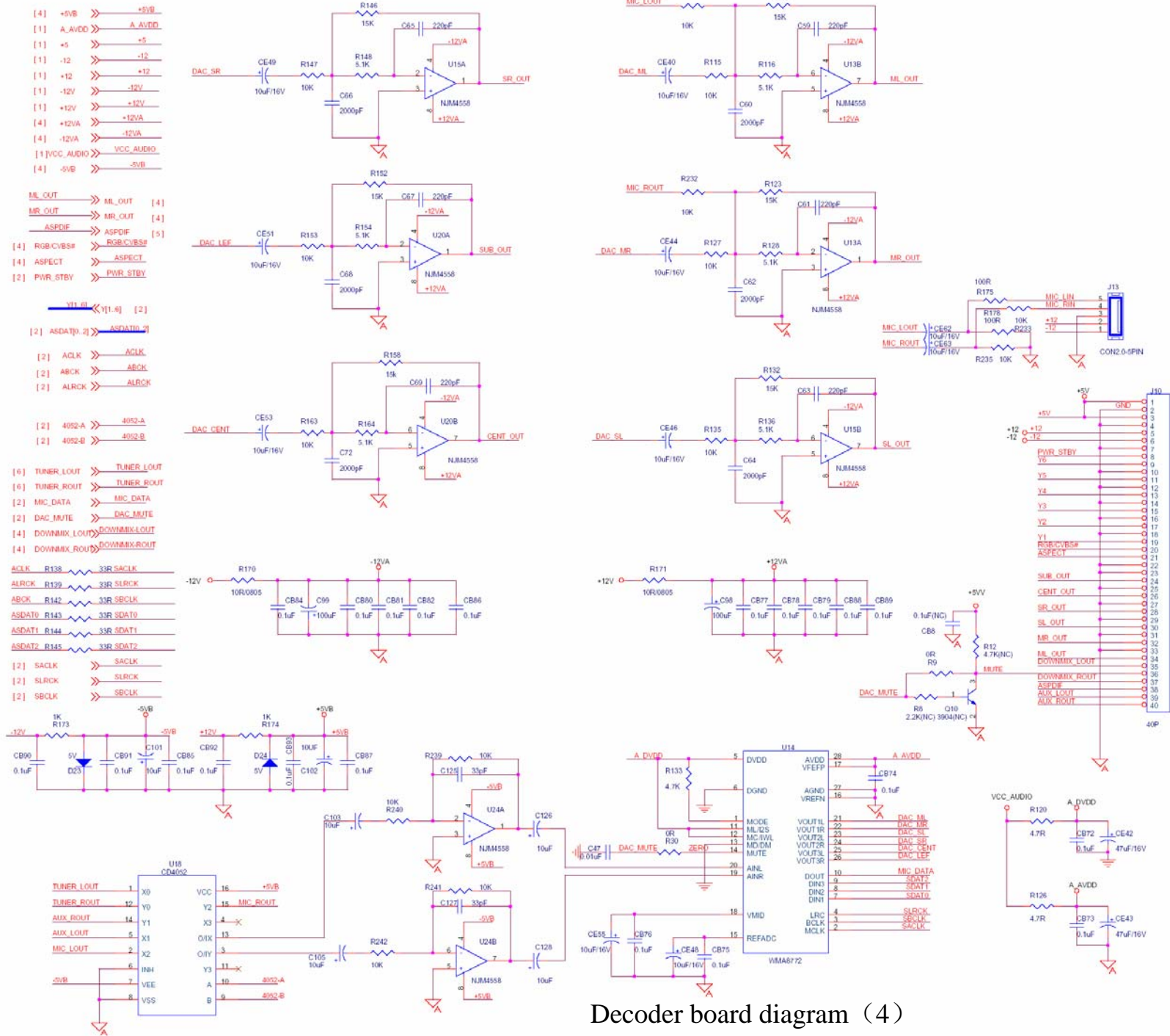
Decoder board diagram (1)



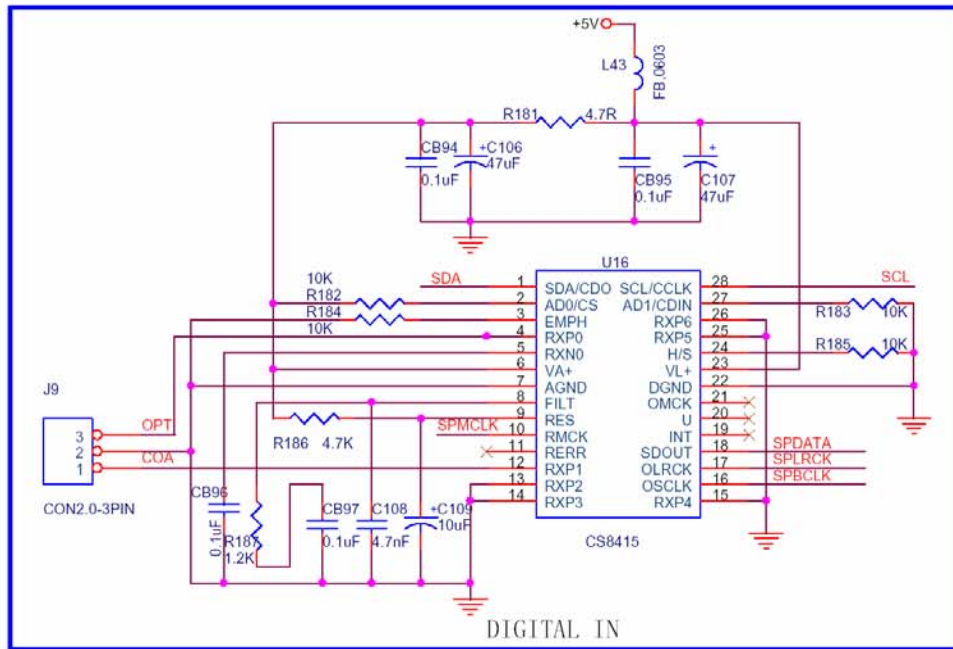
Decoder board diagram (2)



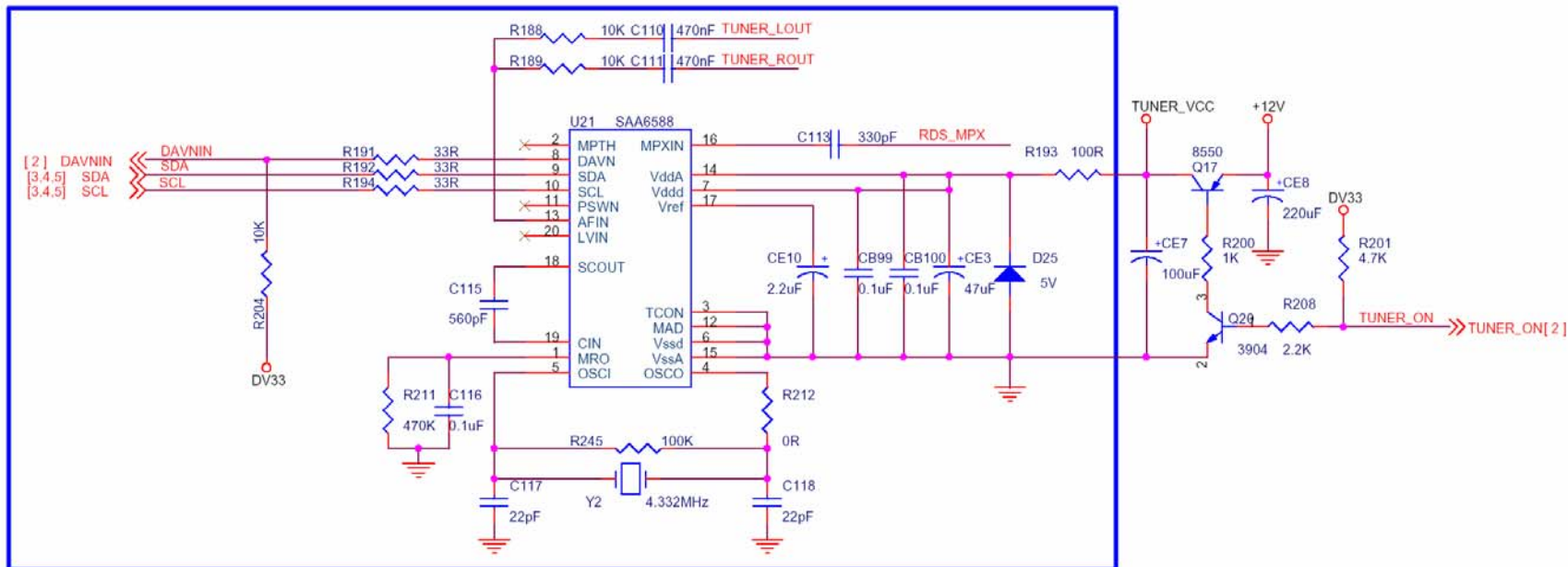
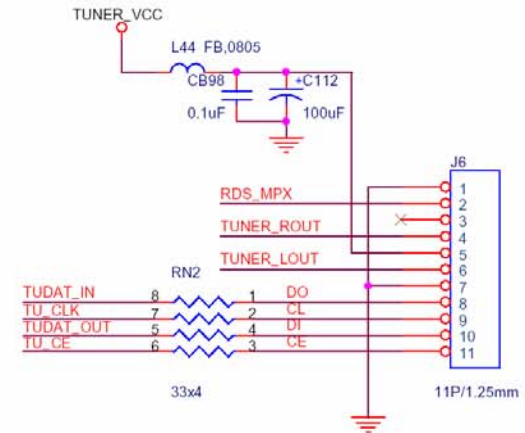
Decoder board diagram (3)



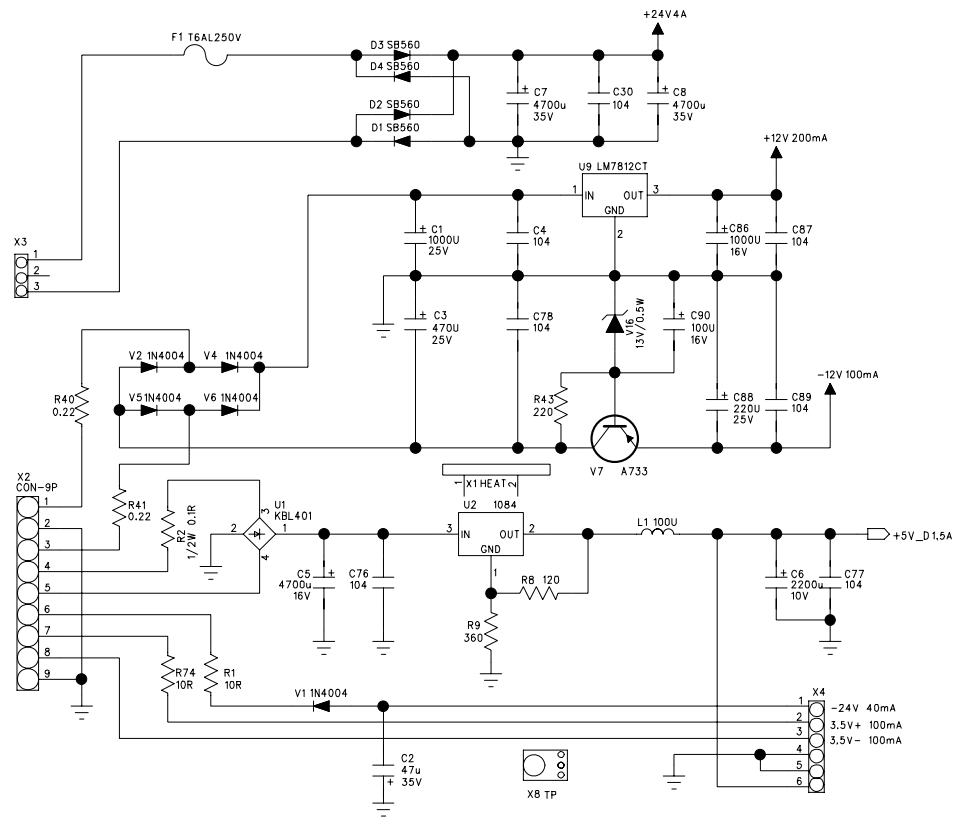
Decoder board diagram (4)



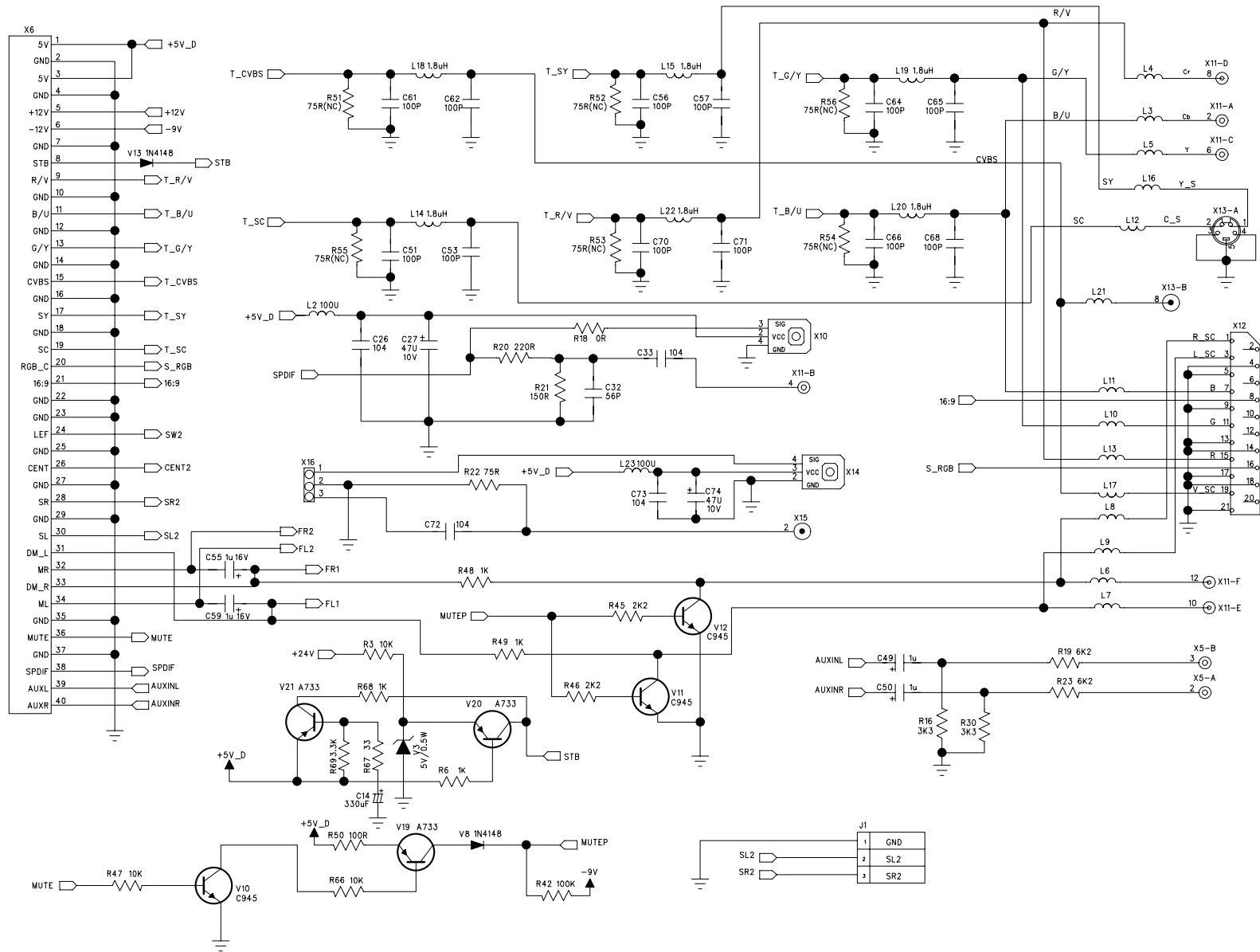
- TUNER_ON << TUNER_ON [2]
- DAVNIN << DAVNIN [2]
- TUNER_ROUT << TUNER_ROUT [5]
- TUNER_LOUT << TUNER_LOUT [5]
- STEREO << STEREO [2]
- TU_CLK << TU_CLK [2]
- TUDAT_OUT << TUDAT_OUT [2]
- TU_CE << TU_CE [2]
- TUDAT_IN << TUDAT_IN [2]
- DV33 << DV33 [1]
- +12V << +12V [1]
- SPDATA << SPDATA [2]
- SPLRCK << SPLRCK [2]
- SPBCLK << SPBCLK [2]
- SPMCLK << SPMCLK [2]
- SDA << SDA [2]
- SCL << SCL [2]



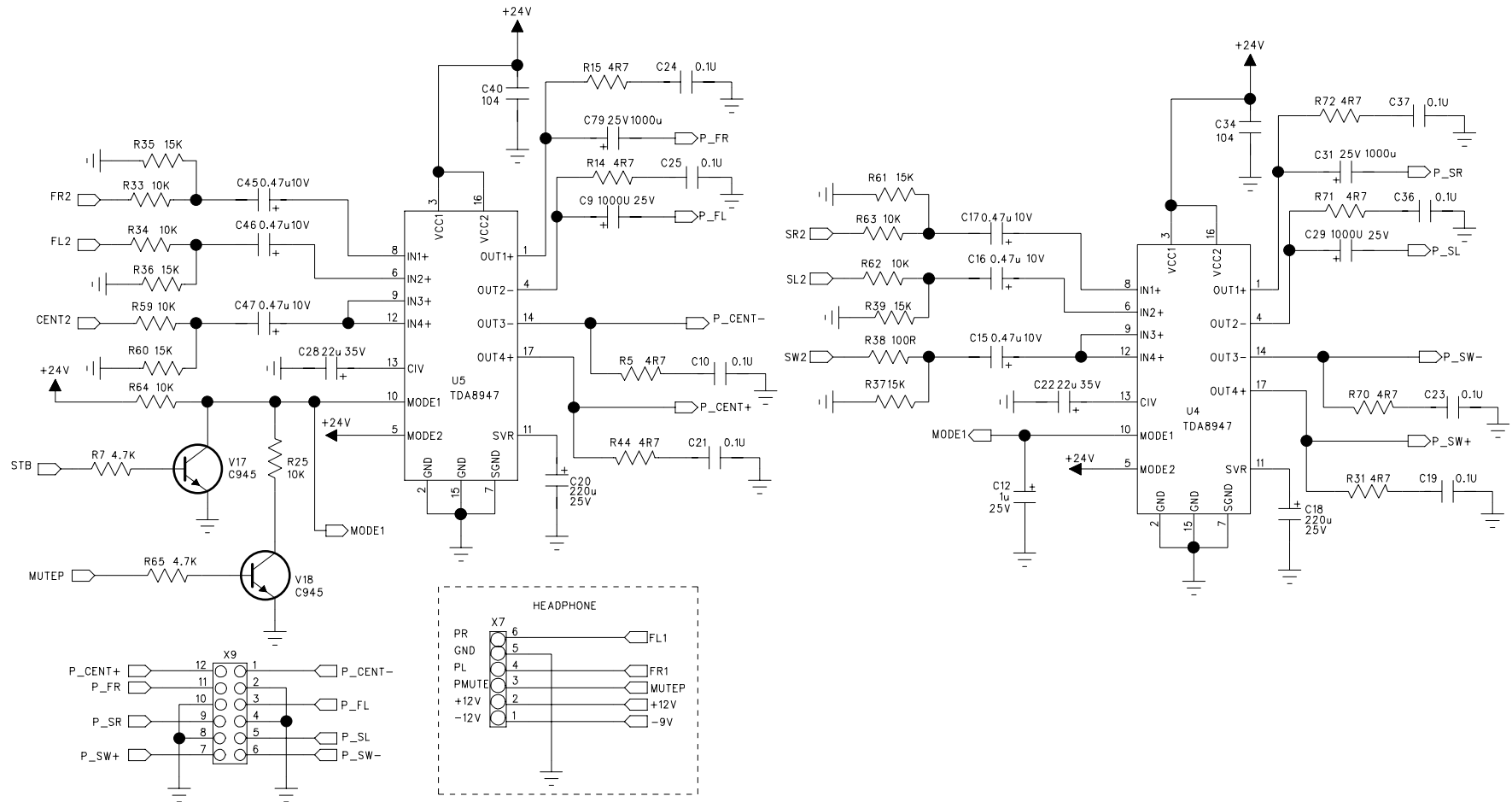
Decoder board diagram (5)



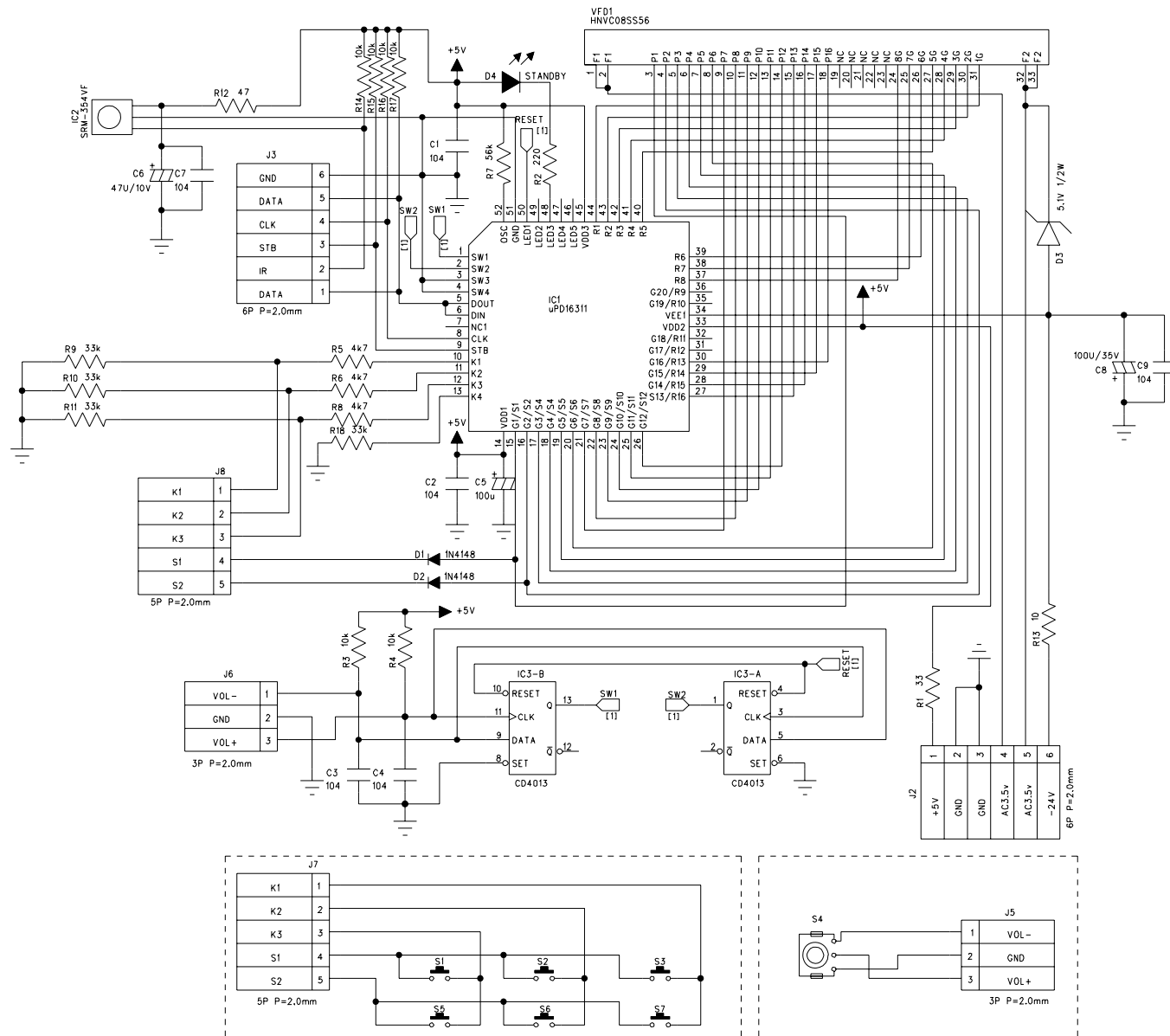
Amplifier board diagram (1)



Amplifier board diagram (2)



Amplifier board diagram (3)



Control board diagram

Attachment 2: PCB diagram

Upper decoder board PCB diagram

Upper decoder board silk screen diagram

Lower decoder board PCB diagram

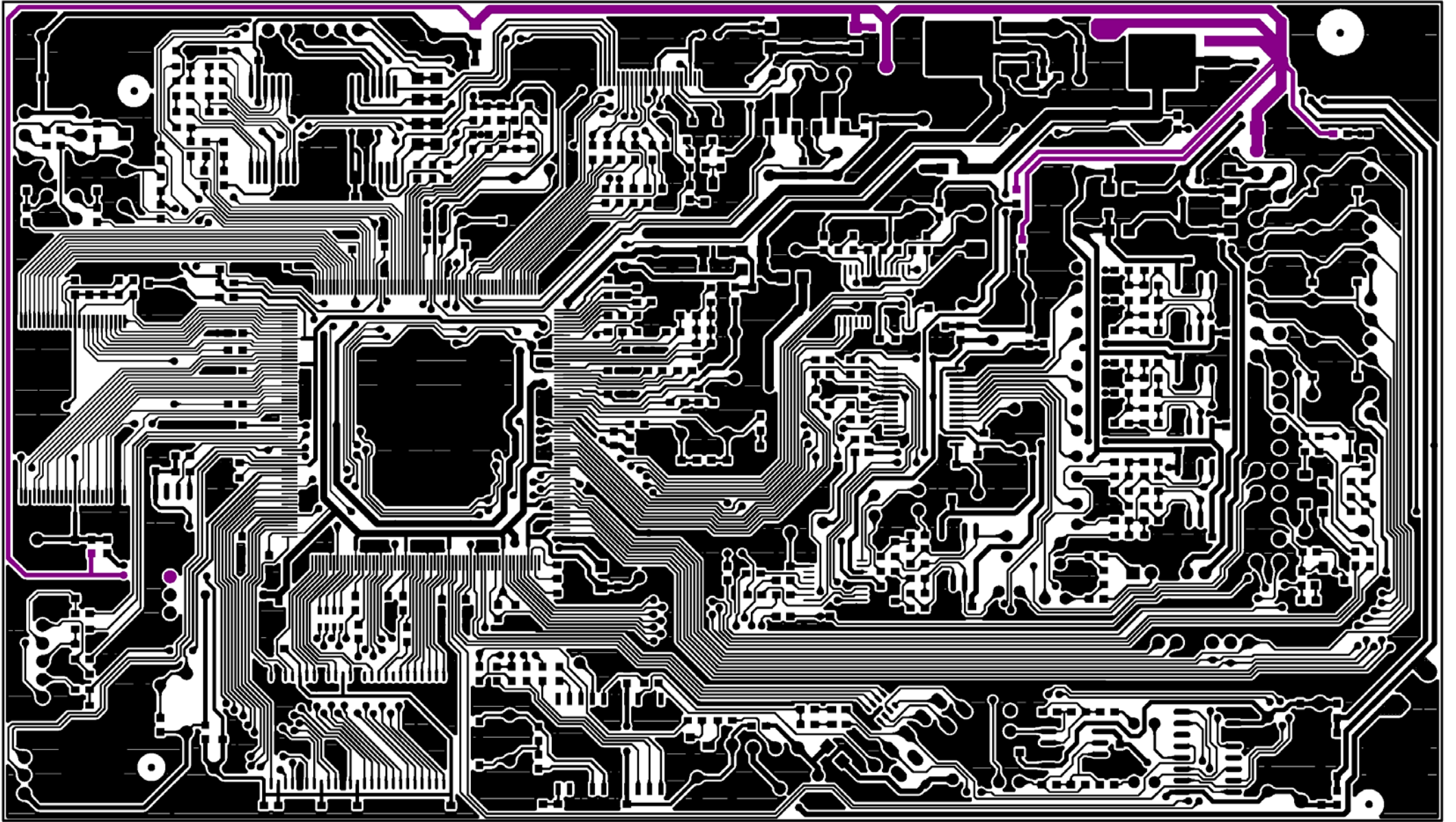
Amplifier board PCB diagram

Amplifier board silk screen diagram

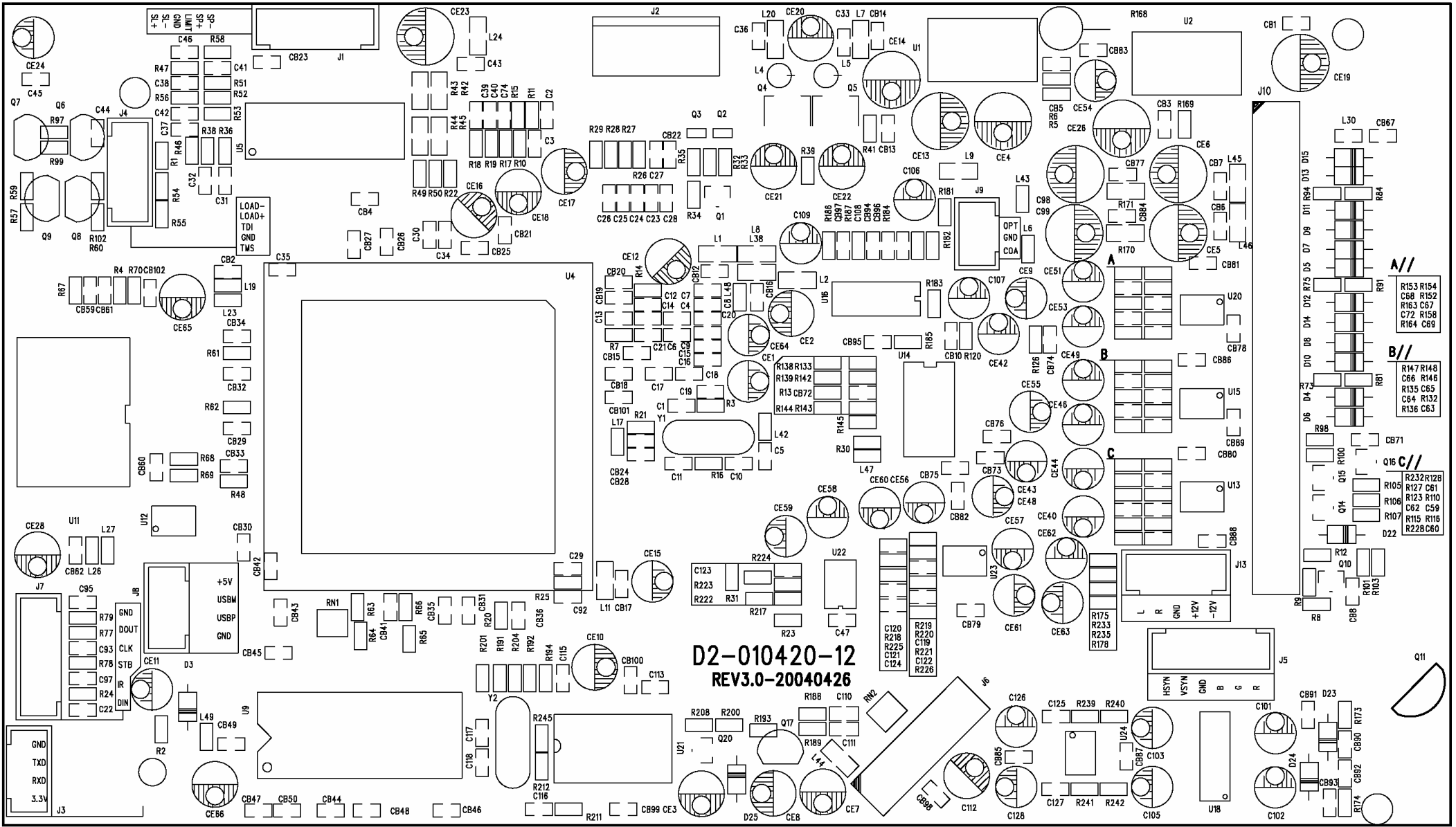
Upper control board PCB diagram

Lower control board PCB diagram

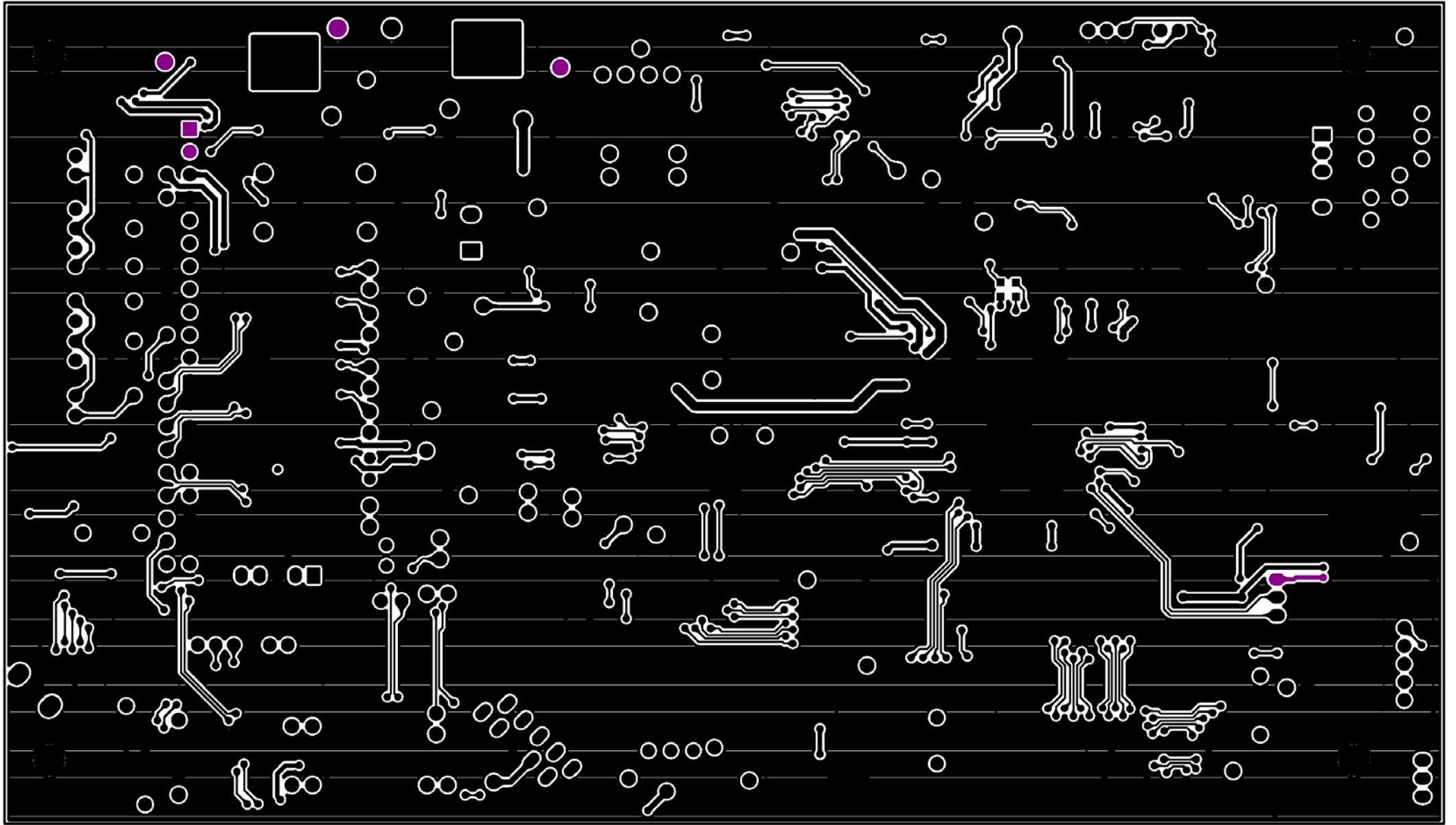
Control board silk screen diagram



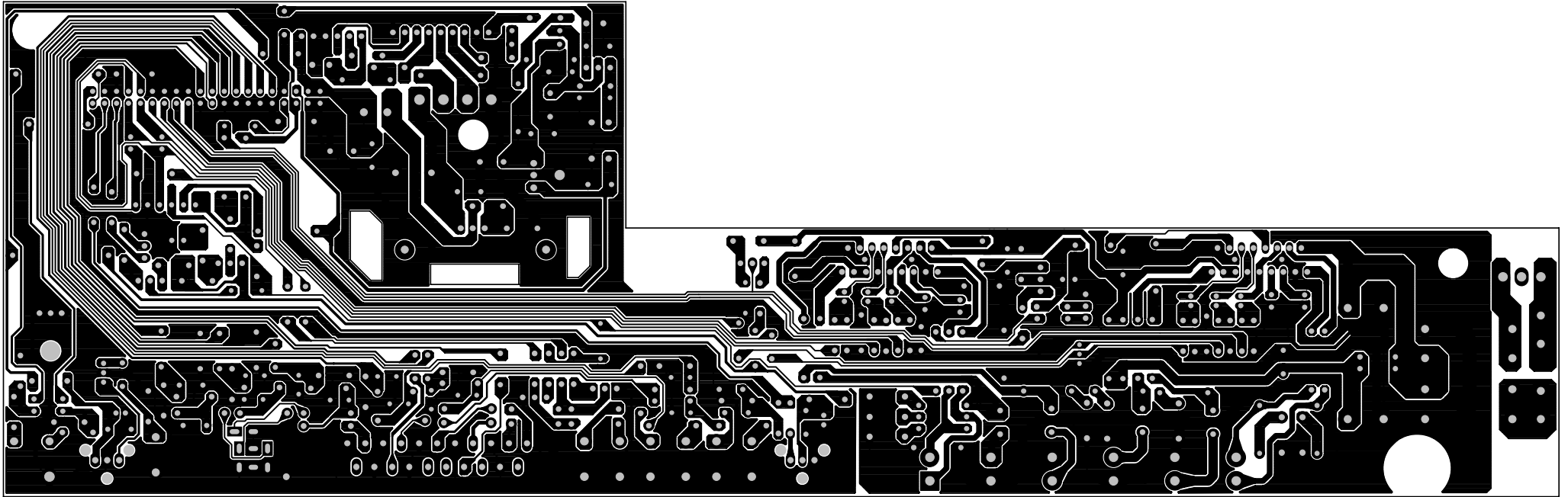
Upper decoder board PCB diagram



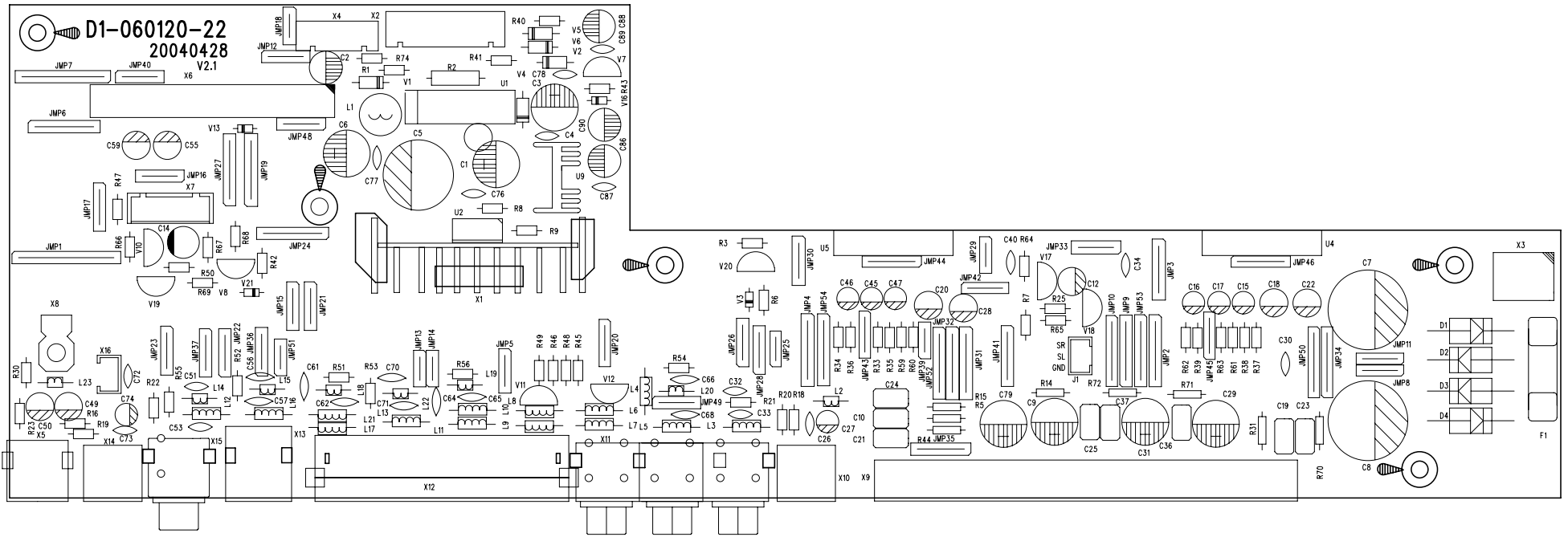
Upper decoder board silk screen diagram



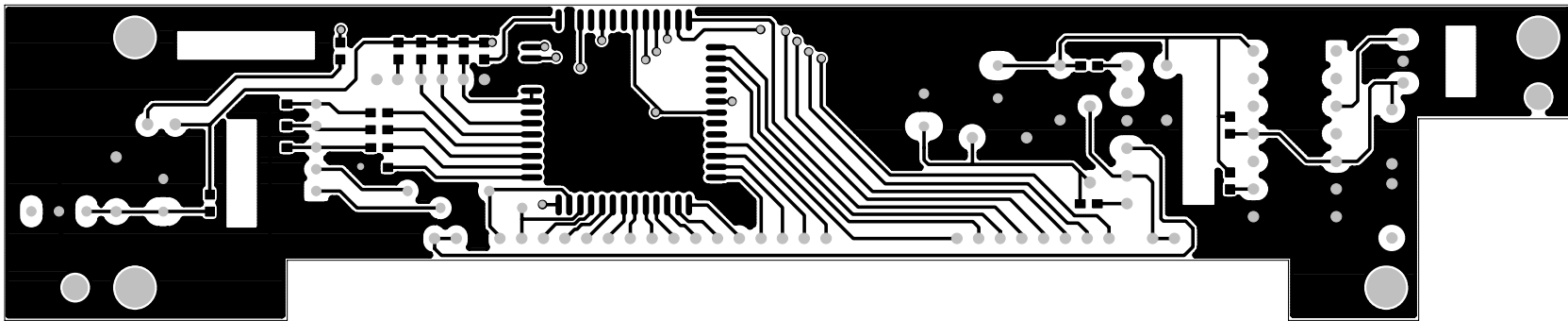
Lower decoder board PCB diagram



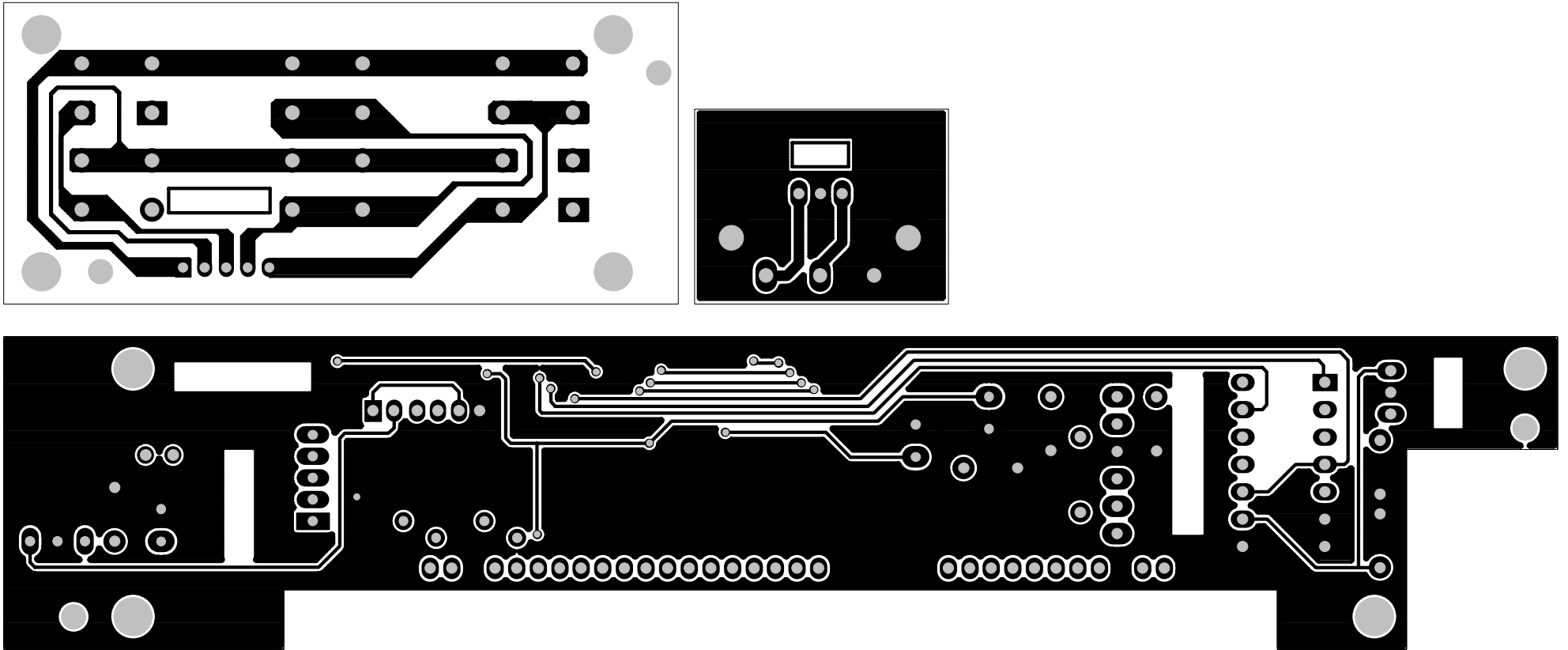
Amplifier board PCB diagram



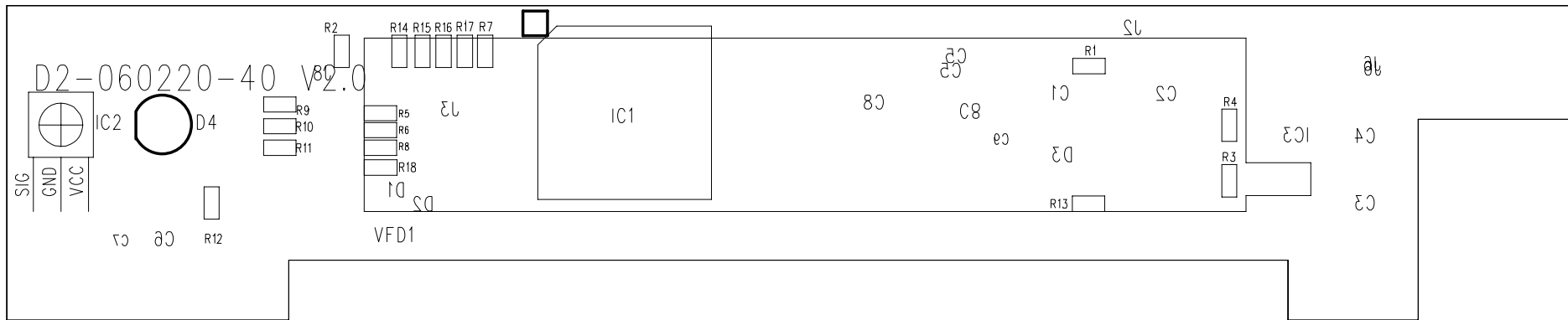
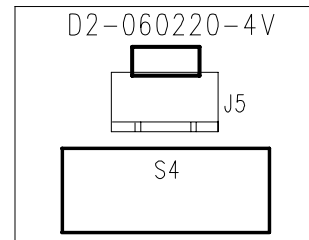
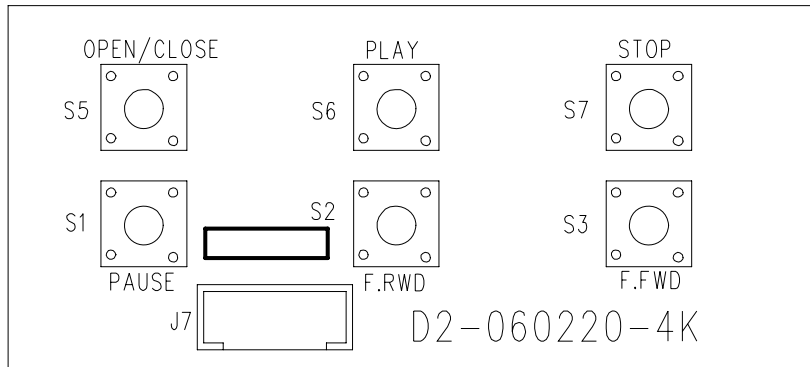
Amplifier board silk screen diagram



Upper control board PCB diagram



Low control board PCB diagram
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Control board silk screen diagram

Attachment 3: Component list

Decoder board component list

Amplifier board component list

Control board component list

Component list

| Decoder board component list | | | | |
|------------------------------|--------------|------------------------------------|-----------------------|-----|
| No. | Material No. | Name | Encase No. | QTY |
| 1 | D2-010420-12 | Decoder PCB board 94V0 | | 1 |
| 2 | C1-200500-JA | 0603 capacitor 20p±5% 50V | C4 | 1 |
| 3 | C1-330500-JA | 0603 capacitor 33p±5% 50V | C10-11、125、127 | 4 |
| 4 | C1-101500-JA | 0603 capacitor 101±5% 50V | C22、93、95、97 | 4 |
| 5 | C1-151500-JA | 0603 capacitor 151±5% 50V | C41-42 | 2 |
| 6 | C1-221500-JA | 0603 capacitor 221±5% 50V | C59、61、63、65、67、 | 8 |
| 7 | | | C69、119、122 | |
| 8 | C1-331500-JA | 0603 capacitor 331±5% 50V | C37-38, C113 | 3 |
| 9 | C1-391500-JA | 0603 capacitor 391±5% 50V | C1 | 1 |
| 10 | C1-102500-KA | 0603 capacitor 102±10% 50V | C6 | 1 |
| 11 | C1-152500-KA | 0603 capacitor 152±10% 50V | C35 | 1 |
| 12 | C1-202500-KA | 0603 capacitor 202±10% 50V | C60、62、64、66、68、 | 8 |
| 13 | | | C72、120、124 | |
| 14 | C1-222500-KA | 0603 capacitor 222±10% 50V | C3、74 | 2 |
| 15 | C1-472500-KA | 0603 capacitor 472±10% 50V | C108 | 1 |
| 16 | C1-153500-KA | 0603 capacitor 153±10% 50V | C40 | 1 |
| 17 | C1-333500-KA | 0603 capacitor 333±10% 50V | C14 | 1 |
| 18 | C1-473500-KA | 0603 capacitor 473±10% 50V | C17-18 | 2 |
| 19 | C1-104500-MA | 0603 capacitor 104±20% 50V | CB1-7、10、12-36、41-50、 | 98 |
| 20 | | | CB59-62、67、71-98、 | |
| 21 | | | CB101-102、 | |
| 22 | | | C7-9、12-13、21、 | |
| 23 | | | C29-30、33-34、36、39、 | |
| 24 | | | C43-47、92、121、123 | |
| 25 | C1-474500-MA | 0603 capacitor 474±20% 50V | C19、110-111 | 3 |
| 26 | C1-105500-MA | 0603 capacitor 1u±20% 50V | C15-16、23-27 | 7 |
| 27 | C2-106160-M9 | Electrolyte capacitor 10u±20% 16V | CE1、11、15、40、 | 25 |
| 28 | | | CE43-44、46、48-49、 | |
| 29 | | | CE51、53-57、59-61、 | |
| 30 | | | C101-103、105、109、 | |
| 31 | | | C126、128、 | |
| 32 | C2-476160-M0 | Electrolyte capacitor 47u±20% 16V | CE16-18、21-22、28、42、 | 12 |
| 33 | | | CE64-66、 | |
| 34 | | | C106-107 | |
| 35 | C2-107160-M0 | Electrolyte capacitor 100u±20% 16V | CE7、9、20、24、58、 | 8 |
| 36 | | | C98-99、112 | |
| 37 | C2-227160-M0 | Electrolyte capacitor 220u±20% 16V | CE2、4-6、8、12-14、19、 | 10 |
| 38 | | | CE26 | |
| 39 | C2-337160-M0 | Electrolyte capacitor 330u±20% 16V | CE23 | 1 |
| 40 | R1-4S7103-J1 | Carbon resistor 4.7Ω±5% 3w | R168 | 1 |

Component list

| Decoder board component list | | | | |
|------------------------------|--------------|--------------------------------|------------------------------|-----|
| No. | Material No. | Name | Encase No. | QTY |
| 1 | R4-1S0008-J4 | 0805 resistor 1Ω ±5% 1/8w | R42-45 | 4 |
| 2 | R4-100008-J4 | 0805 resistor 10Ω ±5% 1/8w | R170-171 | 2 |
| 3 | R4-0S0010-J3 | 0603 resistor 0Ω ±5% 1/10w | R9、11、21、26-30、212 | 11 |
| 4 | | | R61-62 | |
| 5 | R4-1S0010-J3 | 0603 resistor 1Ω ±5% 1/10w | R22 | 1 |
| 6 | R4-4S7010-J3 | 0603 resistor 4.7Ω ±5% 1/10w | R120、126、181 | 3 |
| 7 | R4-100010-J3 | 0603 resistor 10Ω ±5% 1/10w | R24、39、41、L48 | 4 |
| 8 | R4-330010-J3 | 0603 resistor 33Ω ±5% 1/10w | R63-66、77-79、105、191、192、194 | 22 |
| 9 | | | R138-139、142-145、217、 | |
| 10 | | | R222-224、L23 | |
| 11 | R4-750010-F3 | 0603 resistor 75Ω ±1% 1/10w | R31、73、75、81、84、 | 8 |
| 12 | | | R91、94、100 | |
| 13 | R4-221010-J3 | 0603 resistor 220Ω ±5% 1/10w | R57、60、97、99 | 4 |
| 14 | RC-357S0A-F3 | 0603 resistor 357Ω ±1% 1/10w | R5 | 1 |
| 15 | R4-561010-F3 | 0603 resistor 560Ω ±1% 1/10w | R25 | 1 |
| 16 | RC-681S0A-F3 | 0603 resistor 681Ω ±1% 1/10w | R6、98 | 2 |
| 17 | R4-102010-J3 | 0603 resistor 1KΩ ±5% 1/10w | R13、48、68-69、173-174、 | 7 |
| 18 | | | R200 | |
| 19 | R4-122010-J3 | 0603 resistor 1.2KΩ ±5% 1/10w | R187 | 1 |
| 20 | R4-222010-J3 | 0603 resistor 2.2KΩ ±5% 1/10w | R101、103、107、208 | 4 |
| 21 | R4-472010-J3 | 0603 resistor 4.7KΩ ±5% 1/10w | R106、133、169、186、 | 5 |
| 22 | | | R201 | |
| 23 | R4-512010-J3 | 0603 resistor 5.1KΩ ±5% 1/10w | R116、128、136、148、 | 8 |
| 24 | | | R154、164、220、226 | |
| 25 | R4-103010-J3 | 0603 resistor 10KΩ ±5% 1/10w | R1-2、33-34、50、52、 | 27 |
| 26 | | | R54-55、58、67、70、115、 | |
| 27 | | | R127、135、147、153、 | |
| 28 | | | R163、182-185、219、225、 | |
| 29 | | | R239-242 | |
| 30 | R4-153010-J3 | 0603 resistor 15KΩ ±5% 1/10w | R14、49、110、123、132、 | 10 |
| 31 | | | R146、152、158、218、 | |
| 32 | | | R221 | |
| 33 | R4-183010-J3 | 0603 resistor 18KΩ ±5% 1/10w | R47 | 1 |
| 34 | R4-203010-J3 | 0603 resistor 20KΩ ±5% 1/10w | R46、51、53、56 | 4 |
| 35 | R4-104010-J3 | 0603 resistor 100KΩ ±5% 1/10w | R7、16、32、35、59、102、245 | 7 |
| 36 | R4-154010-J3 | 0603 resistor 150KΩ ±1% 1/10w | R17、19 | 2 |
| 37 | R4-684010-J3 | 0603 resistor 680KΩ ±5% 1/10w | R10、15 | 2 |
| 38 | R4-754010-J3 | 0603 resistor 750KΩ ±5% 1/10w | R3 | 1 |
| 39 | R6-33004J-30 | 0603 resistor 4×33Ω ±5% | RN1-2 | 2 |
| 40 | L4-016008-60 | 0603 magnetism bead 100MHz 600 | L6、17、19、26-27、 | 9 |

Component list

| Decoder board component list | | | | |
|------------------------------|--------------|---------------------------------|-----------------|-----|
| No. | Material No. | Name | Encase No. | QTY |
| 1 | | | L30、43、47、49 | |
| 2 | L4-020012-60 | 0805 magnetism bead 100MHz 600Ω | L1-2、7-9、11、20、 | 12 |
| 3 | | | L24、38、L44-46 | |
| 4 | L1-100001-J0 | Inductance 10uH ±5% | L4-5 | 2 |
| 5 | V1-141480-10 | Diode 1N4148 | D3-15 | 13 |
| 6 | V1-5S1002-20 | Zener 5.1V 1/2W | D23-25 | 3 |
| 7 | V1-6S8002-20 | Zener 6.8V 1/2W | D22 | 1 |
| 8 | Z1-27S006-00 | Basic oscillator 27MHz 49S type | Y1 | 1 |
| 9 | VC-230180-60 | MOSFET 2SK3018 SC-70 | Q2-3 | 2 |
| 10 | VB-211320-10 | Transistor 2SB1132R SOT89 | Q4-5 | 2 |
| 11 | VB-239040-10 | Transistor SST3904/2N3904 SOT23 | Q1、14-15、20 | 4 |
| 12 | VB-239060-10 | Transistor SST3906/2N3906 SOT23 | Q16 | 1 |
| 13 | V2-855000-10 | Transistor 8550 TO-92 | Q6-7、17 | 3 |
| 14 | V2-805000-10 | Transistor 8050 TO-92 | Q8-9 | 2 |
| 15 | IC-111700-21 | IC AS1117M3/AK174J SOT223 | U1 | 1 |
| 16 | IC-111733-20 | IC B1117N-33M142 SOT223 | U2 | 1 |
| 17 | IC-111700-20 | IC AS1117M (3.3V) SOT223 | U2 | |
| 18 | IC-138900-22 | IC MT1389EE LQFP256 | U4 | 1 |
| 19 | IC-595400-20 | IC BA5954FP HSOP-28 | U5 | 1 |
| 20 | IC-565400-20 | IC AT5654 HSOP-28 | U5 | |
| 21 | IC-126416-20 | IC M12L64164A-7T TSOP54 | U9 | 1 |
| 22 | IC-264160-27 | SDRAM N2SV6416DT-7K TSOP54 | U9 | |
| 23 | IC-291607-20 | IC 29LV160BE-70PFTN TSOP-48 | U11 | 1 |
| 24 | IC-291609-29 | IC MX29LV160BTC-90 TSOP-48 | U11 | |
| 25 | IC-241600-20 | IC AT24C16 S08NB | U12 | 1 |
| 26 | IC-455800-20 | IC JRC4558 S08NB | U13、15、20、23-24 | 5 |
| 27 | IC-877200-20 | IC WM8772 TSSOP28 | U14 | 1 |
| 28 | IC-841500-20 | IC CS8415A TSSOP28 | U16 | 1 |
| 29 | IC-744052-20 | IC 74HC4052 S016NB | U18 | 1 |
| 30 | IC-174200-20 | IC PCM1742 SSOP-16 | U22 | 1 |
| 31 | IC-780900-10 | IC LM7809 TO-220 | Q11 | 1 |
| 32 | X4-020003-10 | Pin jack 3PIN/2.0mm 180° | J9 | 1 |
| 33 | X4-020004-10 | Pin jack 4PIN/2.0mm 180° | J8 | 1 |
| 34 | X4-020005-10 | Pin jack 5PIN/2.0mm 180° | J4 | 1 |
| 35 | X4-020006-10 | Pin jack 6PIN/2.0mm 180° | J1、7 | 2 |
| 36 | X4-012511-10 | Connector 11PIN/1.25mm 180° | J6 | 1 |
| 37 | X4-005024-40 | Pin jack 24PIN/0.5mm 90° | J2 | 1 |
| 38 | X3-254402-30 | Pin jack 40PIN/2.54mm 180° | J10 | 1 |
| 39 | | | | |
| 40 | | | | |

Component list

| Amplifier board component list | | | | |
|--------------------------------|--------------|---|--------------------------|-----|
| No. | Material No. | Name | Encase No. | QTY |
| 1 | D1-060120-22 | Amplifier PCB board | | 1 |
| 2 | Y3-06016C-12 | Heat sink holder | Big heat sink | 2 |
| 3 | N8-182032-00 | Big heat sink | U4-5 | 1 |
| 4 | N8-046017-03 | Small heat sink | U2 | 1 |
| 5 | N5-049010-10 | Soldering terminal | X12 | 1 |
| 6 | RA-S10002-J0 | Carbon resistor 0.1 Ω \pm 5% 1/2w | R2 | 1 |
| 7 | RA-S22008-J1 | Carbon resistor 0.22 Ω \pm 5% 1/8w | R40-41 | 2 |
| 8 | R1-100008-J2 | Carbon resistor 10 Ω \pm 5% 1/8w | R1, 74 | 2 |
| 9 | R1-330008-J1 | Carbon resistor 33 Ω \pm 5% 1/8w | R18, 67 | 2 |
| 10 | R1-101008-J2 | Carbon resistor 100 Ω \pm 5% 1/8w | R38, 50 | 2 |
| 11 | R1-121008-J2 | Carbon resistor 120 Ω \pm 5% 1/8w | R8 | 1 |
| 12 | R1-151008-J2 | Carbon resistor 150 Ω \pm 5% 1/8w | R21 | 1 |
| 13 | R1-221008-J2 | Carbon resistor 220 Ω \pm 5% 1/8w | R20, 43 | 2 |
| 14 | R1-361008-J2 | Carbon resistor 360 Ω \pm 5% 1/8w | R9 | 1 |
| 15 | R1-102008-J2 | Carbon resistor 1K Ω \pm 5% 1/8w | R6, 48-49, 68 | 4 |
| 16 | R1-222008-J2 | Carbon resistor 2.2K Ω \pm 5% 1/8w | R45-46 | 2 |
| 17 | R1-332008-J2 | Carbon resistor 3.3K Ω \pm 5% 1/8w | R16, 30, 69 | 3 |
| 18 | R1-472008-J2 | Carbon resistor 4.7K Ω \pm 5% 1/8w | R7, 65 | 2 |
| 19 | R1-622008-J2 | Carbon resistor 6.2K Ω \pm 5% 1/8w | R19, 23 | 2 |
| 20 | R1-103008-J2 | Carbon resistor 10K Ω \pm 5% 1/8w | R3, 25, 33-34, 47, 59, | 10 |
| 21 | | | R62-64, 66 | |
| 22 | R1-153008-J2 | Carbon resistor 15K Ω \pm 5% 1/8w | R35-37, 39, 60-61 | 6 |
| 23 | R1-104008-J2 | Carbon resistor 100K Ω \pm 5% 1/8w | R42 | 1 |
| 24 | R1-4S7004-J2 | Carbon resistor 4.7 Ω \pm 5% 1/4w | R5, 14-15, 31, 44, 70-72 | 8 |
| 25 | C1-560500-M2 | Ceramic capacitor 56p \pm 20% 50V | C32 | 1 |
| 26 | C1-104500-M2 | Ceramic capacitor 104 \pm 20% 50V | C4, 26, 30, 33-34, 40, | 11 |
| 27 | | | 76-78, 87, 89 | |
| 28 | C4-104101-K3 | Terylene capacitor 104 \pm 10% 50V | C10, 19, 21, 23-25, | 8 |
| 29 | | | C36-37 | |
| 30 | C2-474500-M9 | Electrolyte capacitor 50V 0.47 \pm 20% | C15-17, 45-47 | 6 |
| 31 | C2-105500-M9 | Electrolyte capacitor 50V 1u \pm 20% | C12, 49-50 | 3 |
| 32 | C2-226350-M0 | Electrolyte capacitor 35V 22u \pm 20% | C22, 28 | 2 |
| 33 | C2-476160-M0 | Electrolyte capacitor 16V 47u \pm 20% | C27 | 1 |
| 34 | C2-476350-M0 | Electrolyte capacitor 35V 47u \pm 20% | C2 | 1 |
| 35 | C2-107160-M0 | Electrolyte capacitor 16V 100u \pm 20% | C90 | 1 |
| 36 | C2-227250-M0 | Electrolyte capacitor 25V 220u \pm 20% | C18, 20, 88 | 3 |
| 37 | C2-337160-M0 | Electrolyte capacitor 16V 330u \pm 20% | C14 | 1 |
| 38 | C2-477250-M0 | Electrolyte capacitor 25V 470u \pm 20% | C3 | 1 |
| 39 | C2-108160-Z0 | Electrolyte capacitor 16V 1000u+80/-20% | C86 | 1 |
| 40 | C2-108250-Z0 | Electrolyte capacitor 25V 1000u+80/-20% | C1, 9, 29, 31, 79 | 5 |

Component list

| Amplifier board component list | | | | |
|--------------------------------|--------------|--|--------------------|-----|
| No. | Material No. | Name | Encase No. | QTY |
| 1 | C2-228100-Z0 | Electrolyte capacitor 10V 2200u+80/-20% | C6 | 1 |
| 2 | C2-478160-Z9 | Electrolyte capacitor 16V 4700u+80/-20% | C5 | 1 |
| 3 | C2-478350-Z9 | Electrolyte capacitor 35V 4700u+80/-20% | C7、8 | 2 |
| 4 | F1-6S3011-00 | Fuse T6.3AL 250V 5×20mm | F1 | 1 |
| 5 | F2-010000-00 | Fuse jack | F1 | 2 |
| 6 | V1-401000-40 | Bridge pile KBL401 | U1 | 1 |
| 7 | V1-140040-10 | Diode 1N4004 | V1-2、4-6、 | 5 |
| 8 | C2-106160-M0 | Electrolyte capacitor 16V 10u±20% | C55、C59 | 2 |
| 9 | V1-141480-10 | Diode 1N4148 | V8、13、 | 2 |
| 10 | V1-560000-10 | Diode SB560 | D1-4 | 4 |
| 11 | V1-5S1002-20 | Zener 5.1V 1/2W | V3 | 1 |
| 12 | V1-130002-20 | Zener 13V 1/2W | V16 | 1 |
| 13 | V2-273300-10 | Triode A733 T0-92 | V7、19-21 | 4 |
| 14 | V2-294500-10 | Triode C945 T0-92 | V10-12、17-18 | 5 |
| 15 | L4-035060-40 | Magnetism bead Φ3.5×6mm100MHz60Ω | L3-13、16-17、21 | 14 |
| 16 | L1-1S8001-J0 | Twist inductance 1.8uH±5% | L14-15、18-20、22 | 6 |
| 17 | L1-101001-J0 | Twist inductance 100uH±5% | L2 | 1 |
| 18 | L1-101101-J0 | Standing inductance 100uH±5% 2A | L1 | 1 |
| 19 | V2-781200-10 | IC LM7812 T0-220 | U9 | 1 |
| 20 | IC-108400-11 | ICAZ1084T-ADJ T0-220 | U2 | 1 |
| 21 | IC-894700-10 | IC TDA8947J DBS17P | U4-5 | 2 |
| 22 | X1-550000-00 | Optical output jack GPIFA550TZ | X10 | 1 |
| 23 | X7-284130-30 | Concentric jack AV2-8.4-13A | X5 | 1 |
| 24 | | Up red, Down white | | |
| 25 | X7-683440-30 | Concentric jack AV6-8.3-44Q | X11 | 1 |
| 26 | | Up white green blue, Down red yellow red | | |
| 27 | X1-105000-00 | 21 pin jack CS105 | X12 | 1 |
| 28 | X1-200000-30 | S-Video + Video concentric jack SAV2 | X13 | 1 |
| 29 | X8-121000-00 | Amplifier board output jack WP12-1 | X9 | 1 |
| 30 | X3-396031-31 | Pin jack 3PIN/3.96 180° | X3 | 1 |
| 31 | X4-025006-10 | Pin jack 6PIN/2.54 180° | X4 | 1 |
| 32 | X4-025009-10 | Pin jack 9PIN/2.54 180° | X2 | 1 |
| 33 | X3-254402-30 | Double pin 40PIN/2.54 180° | X6 | 1 |
| 34 | J1-0605S0-00 | Jumper wire Φ0.6×5mm | JMP13-14、18、25、29、 | 7 |
| 35 | | | JMP39、51 | |
| 36 | J1-0607S0-00 | Jumper wire Φ0.6×7mm | JMP5 | 1 |
| 37 | J1-0607S5-00 | Jumper wire Φ0.6×7.5mm | JMP8、11-12、15-17、 | 22 |
| 38 | | | JMP20-23、26、28、30、 | |
| 39 | | | JMP33、36-37、40、42、 | |
| 40 | | | JMP43、45、48-49 | |

Component list

| Amplifier board component list | | | | |
|--------------------------------|--------------|---|---|-----|
| No. | Material No. | Name | Encase No. | QTY |
| 1 | J1-060100-00 | Jumper wire $\Phi 0.6 \times 10\text{mm}$ | JMP3、35、41、44、46 | 5 |
| 2 | J1-060120-00 | Jumper wire $\Phi 0.6 \times 12.5\text{mm}$ | JMP2、4、6、9-10、19、 | 14 |
| 3 | | | JMP27、31-32、34、50、 | |
| 4 | | | JMP52-54 | |
| 5 | J1-060170-00 | Jumper wire $\Phi 0.6 \times 17.5\text{mm}$ | JMP7 | 1 |
| 6 | J1-060200-00 | Jumper wire $\Phi 0.6 \times 20\text{mm}$ | JMP1 | 1 |
| 7 | N0-300051-10 | Soldering terminal | X8 | 1 |
| 8 | N2-300615-54 | Screw ST3×6PWTT Nickel | Amplifier board, big heat sink and holder | 5 |
| 9 | | | Small heat sink and U2 | |
| 10 | N2-301015-54 | Screw ST3×10PWTT Nickel | Big heat sink and U4-5 | 4 |
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Component list

| Control board component list | | | | |
|------------------------------|--------------|-------------------------------------|----------------|-----|
| No. | Material No. | Name | Encase No. | QTY |
| 1 | D2-060220-4K | Key board | | 1 |
| 2 | D2-060220-4V | Decoder board | | 1 |
| 3 | D2-060220-40 | VFD board | | 1 |
| 4 | 08-012012-20 | VFD rubber mat | VFD1 | 2 |
| 5 | 08-070707-10 | Sponge mat 7×7×7mm | IC2 | 1 |
| 6 | W1-351036-10 | 3PIN flat ribbon wires 5mm L=350mm | J5-J6 | 1 |
| 7 | W1-381056-10 | 5PIN flat ribbon wires 5mm L=380mm | J7-J8 | 1 |
| 8 | W3-501066-10 | 6PIN/2.0 flat ribbon wires L=500mm | J3 | 1 |
| 9 | W3-551066-20 | 6PIN/2.5 flat ribbon wires L=550mm | J2 | 1 |
| 10 | C1-104500-Z2 | Ceramic capacitor 50V 104-20%+80% | C1-4, C7 | 5 |
| 11 | C2-107100-M0 | Electrolyte capacitor 10V 100uF±20% | C5, C6 | 2 |
| 12 | C2-107350-M0 | Electrolyte capacitor 35V 100uF±20% | C8 | 1 |
| 13 | R4-100016-J3 | Chip resistor 1/16W 10Ω±5% | R13 | 1 |
| 14 | R4-330016-J3 | Chip resistor 1/16W 33Ω±5% | R1 | 1 |
| 15 | R4-221016-J3 | Chip resistor 1/16W 220Ω±5% | R2 | 1 |
| 16 | R4-103016-J3 | Chip resistor 1/16W 10KΩ±5% | R3-R4, R14-R17 | 6 |
| 17 | R4-333016-J3 | Chip resistor 1/16W 33KΩ±5% | R9-R11, R18 | 4 |
| 18 | R4-472016-J3 | Chip resistor 1/16W 4.7KΩ±5% | R5, R6, R8 | 3 |
| 19 | R4-470016-J3 | Chip resistor 1/16W 47Ω±5% | R12 | 1 |
| 20 | R4-563016-J3 | Chip resistor 1/16W 56KΩ±5% | R7 | 1 |
| 21 | L4-120160-30 | Magnetism annulus: K5BT16×12×8 | | 2 |
| 22 | V1-141480-10 | Diode 1N4148 | D1-2 | 2 |
| 23 | V1-5S1002-20 | Zener 5.1V 1/2W | D3 | 1 |
| 24 | V1-253021-30 | LBD Φ3 red | D4 | 1 |
| 25 | S5-162420-00 | Digital encoder EC16E-24C-20F-C | S4 | 1 |
| 26 | N3-090020-10 | Nut M9×2mm | Coding switch | 1 |
| 27 | N0-900053-10 | Mat Φ9×Φ20×0.5mm | Coding switch | 1 |
| 28 | Y7-010008-40 | Varnished tube Φ1.0×8mm | D4 | 2 |
| 29 | S3-665000-00 | Soft touch switch 6×6×5 | S1-3 5-7 | 6 |
| 30 | P3-085600-00 | Display screen HNVC08SS56 | VFD1 | 1 |
| 31 | IC-354000-10 | Receiver SRM-354VF | IC2 | 1 |
| 32 | IC-401300-10 | IC CD4013 DIP-14 | IC3 | 1 |
| 33 | IC-163110-20 | IC uPD16311 or CS16311 | IC1 | 1 |
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