

Service
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Service Manual

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1. Technical Specifications, Connections

Note: Described specifications are valid for the whole product range.

1.1 Technical Specifications

1.1.1 Reception

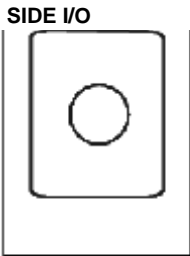
Tuning system	: PLL
Colour system	: NTSC M
Sound system	: BTSC
A/V connections	: PAL 4.43
	: NTSC
	: 3.58&NTSC4.43
Channel selections	: 181 channels
IF frequency	: 45.75MHz
Aerial input	: 75Ω,Coaxial

1.1.2 Miscellaneous

Audio output(RMS)	: 24W
Mains voltage	: 120V(±10%)
Mains frequency	: 60Hz(±5%)
Ambient temperature	: +5 to +45 deg. C
Maximum humidity	: 90% R.H.
Power consumption	: 98W
Standby Power consumption	: <1W

1.2 Connections

1.2.1 Side connections, Top (or Front) Control



Headphone output

Figure 1-1

TOP CONTROL

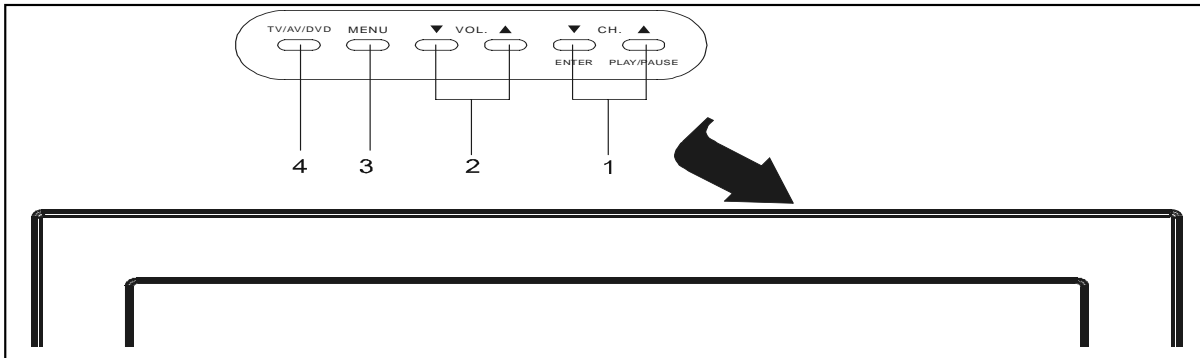


Figure 1-2

1. Chanel up/down buttons
2. Volume/picture control buttons
3. Menu button
4. TV/AV/DVD button

FRONT CONTROL

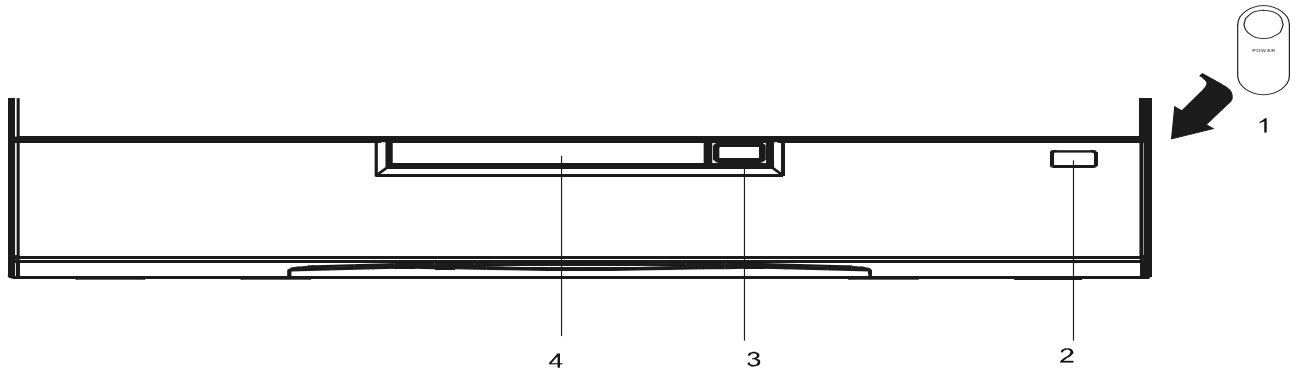


Figure 1-3

1. Power button
2. Standby indicator
3. Open button
4. Open door

1.2.2 Rear Connections

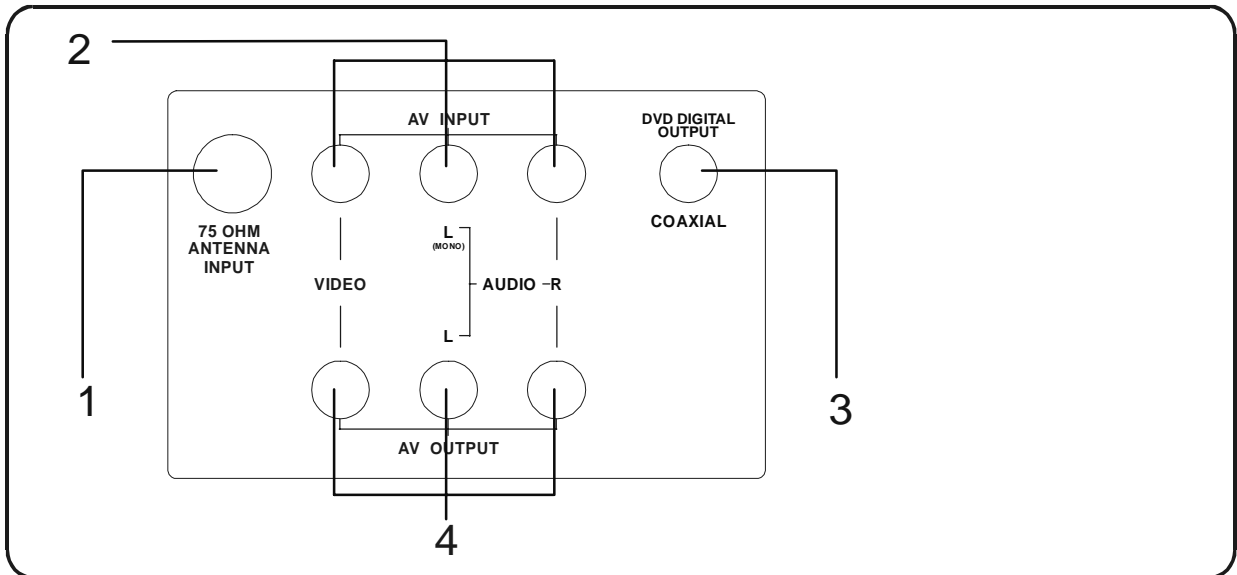


Figure 1-4

1. 75 OHM antenna input
2. Audio/Video in(AV input)
3. DVD digital video output/coaxial
4. Audio/Video output(Monitor output)

Audio/video in


1. Video CVBS (1Vpp/75Ω)
2. Audio L (0.5 Vrms/10kΩ)
3. Audio R (0.5 Vrms/10kΩ)
4. headphone 3.5mm(8 - 600Ω/4Mw)

2. Safety & Maintenance Instructions, Warnings, and Notes

2.1 Safety Instructions For Repairs

2.1.1 General Safety

Safety regulations require that during a repair

- Due to the 'hot' parts of this chassis, the set must be connected to the AC power via an isolation transformer.
- Safety components, indicated by the symbol , should be replaced by components identical to the original ones.
- When replacing the CRT, safety goggles must be worn.

Safety regulations require that after a repair, the set must be returned in its original condition. Pay 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 is flowing, in particular:
 - all pins of the line output transformer(LOT)
 - fly-back capacitor(s)
 - S-correction capacitor(s)
 - line output transistor
 - pins of the connector with wires to the deflection coil
 - 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 AC power cord for external damage.
- Check the strain relief of the AC power cord for proper function, to prevent the cord from touching the CRT, hot components, or heat sink.
- Check the electrical DC resistance between the AC plug and the secondary side (only for sets that have an isolated power supply). Do this as follows:
 1. Unplug the AC power cord and connect a wire between the two pins of the AC plug.
 2. Turn on the main power switch (keep the AC power cord unplugged)
 3. Measure the resistance value between the pins of the AC plug and the metal shielding of the tuner or the aerial connection of the set. The reading should be between 4 M and 8 M.
 4. Switch the TV OFF and remove the wire between two pins of the AC plug.
- Check the cabinet for defects, to prevent the possibility of the customer touching any internal parts.

2.1.2 Laser Safety

This unit employs a laser. Only qualified service personnel remove the cover, or attempt to service this device (due to possible eye injury).

Laser Device Unit

Type	: semiconductor laser GaA/As
Wavelength	: 650 nm (DVD) : 780 nm (VCD/CD)
Output Power	: 7 mW (DVD) : 10 mW (VCD/DVD)
Beam divergence	: 60 degree





Figure 2-1 Class 1 Laser Product

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

2.1.3 Shock, Fire Hazard Service Test

Caution: After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front panel of the product and controls and chassis bottom. Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before return to user/customer. Ref. UL Standard NO. 1492

Note on safety:

Symbol : Fire or electrical shock hazard. Only original parts should be used to replace any part with symbol  (other than original type), may increase risk of fire or electrical shock hazard.

2.2 Maintenance Instructions

It is recommended to have a maintenance inspection carried out by qualified service personnel. The interval depends on the usage conditions:

- When the set is used under normal circumstances, for example in a living room, the recommended interval is three to five years.
- When the set is used 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

2.3.1 General

- 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 Fig. 2-1, to discharge the picture tube. Use a high voltage probe and a multi-meter (position VDC). Discharge until the meter reading is 0 V (after approx. 30 s).

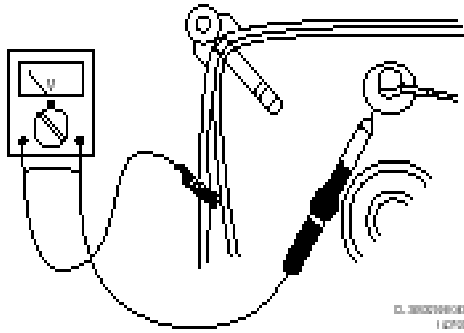


Figure 2-2

- Where necessary, measure the waveforms and voltages with (⏏) and without (⏏) aerial signal. Measure the voltages in the power supply section both in normal operation (ⓐ) and in standby (ⓑ). These values are indicated by means of the appropriate symbols.
- The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
- The semiconductors indicated in the circuit diagram and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that 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 potential. Available ESD protection equipment:
 - Complete kit ESD3 (small tablemat, wristband, connection box, extension cable, and ground cable) 4822 310 10671.
 - Wristband tester 4822 344 13999.
- Together with the deflection unit and any multi-pole unit, flat square picture tubes form an integrated unit. The deflection and the multi-pole units are set optimally at the factory. Adjustment of this unit during repair is therefore not recommended.
- Be careful during measurements in the high voltage section and on the picture tube.
- 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 the danger of a circuit becoming unstable.

2.3.2 Laser

- The use of optical instruments with this product, will increase eye hazard.
- Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.
- Repair handling should take place as much as possible with a disc loaded inside the player.
- Text below is placed inside the unit, on the laser cover shield.

<p>CAUTION VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN VARNING SYNLIG OCH OSYNLIG LASERSTRÅLNING NÅR DENNA DEL ÅR ÖPPNAD BETRAKTA EJ STRÅLEN VAROJ AVATT AESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTT ÖMÄLLE LASER SÄTEILYLLE. ÄLÄ KATSO SÄTEESSEN VORSICHT SICHTBARE UND UNSICHTBARE LASERSTRÄHLING WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETZEN DANGER VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM ATTENTION RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE EXPOSITION DANGEREUSE AU FAISCEAU</p>

Figure 2-3 Warning text

2.4 Notes

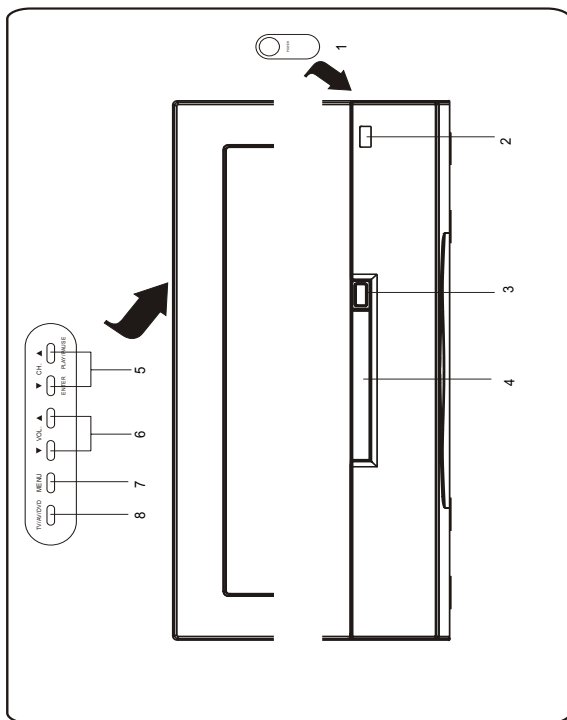
- Measure the voltages and waveforms with regard to the chassis (= tuner) ground (⏏), or hot ground (⏏), depending on the area of circuitry being tested.
- The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode (see chapter 5) with a color bar signal and stereo sound (L:3KHz, R: 1KHz unless stated otherwise) and picture carrier at 475.25MHz (PAL) or 61.25MHz (NTSC, channel 3).

3. Directions For Use

1. INTRODUCTION

1.2 DESCRIPTION OF CONTROL KEYS & CONNECTOR

1.2.1 FRONT PANEL



- 1. POWER BUTTON**
To turn ON/OFF the TV set.
- 2. STANDBY INDICATOR**
Lights when the TV is in the working mode, and goes out when it is in the standby mode..
- 3. OPEN BUTTON**
To open or close the open door of DVD.
- 4. DVD OPEN DOOR**
- 5. CHANNEL (▼/▲) BUTTONS**
Select program number cyclically
To turn on the TV when it is in standby mode.
To select the item in sub-menus.
PLAY/PAUSE or ENTER, as the silkprint below shows, works respectively only when the set is in DVD state. Please refer their corresponding function introductions to the DVD section.
- 6. VOLUME/PICTURE CONTROL (▼/▲) BUTTONS**
To decrease/increase the sound volume and picture settings level.
- 7. MENU BUTTON**
To display the main menu on the screen.
- 8. TV/AV/DVD BUTTON**
To switch between TV program, AV input and DVD sources.

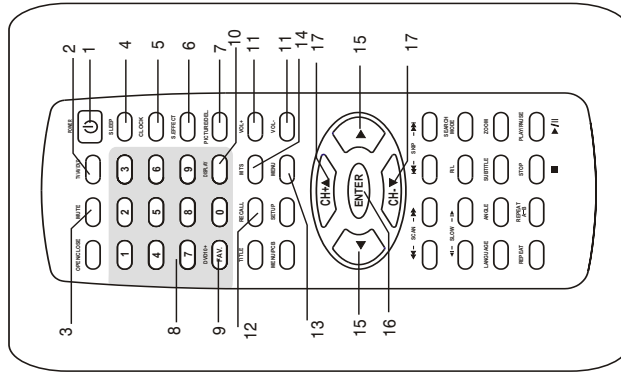
1. INTRODUCTION

1.1 FEATURES

- + **TINTED BRIGHT BLACK PICTURE TUBE**
Dynamically boosts the black level in the dark areas of the picture according to picture content. Increases shadow detail without compromising overall picture contrast.
- + **4 PICTURE SETTINGS**
The picture this television produces can be personalized to produce the optimum display quality.
- + **3 LANGUAGE OSD**
This television can display the menu in three languages: English, French and Spanish.
- + **SLEEP TIMER**
Lets the user watch television for a preset amount of time before the unit goes into standby mode. This television can be programmed up to 120 minutes. (10 minutes intervals)
- + **V-CHIP**
Allows parents to restrict viewing of certain channels containing content they deem inappropriate.
- + **CLOSED CAPTION DECODER**
This television is equipped with a Closed Caption Decoder that enables the set to print the audio portion of a television program on the screen, similar to subtitles. Please check your local listings for program broadcasts that have been closed captioned. (more on pg 26)
- + **FULL FUNCTION REMOTE CONTROL**
This television can be fully operated and programmed using the supplied remote control.
- + **AUTO OFF FUNCTION**
 - If the TV set is turned on from ON Timer function, the TV set will turn off automatically after 15 minutes without any operation on the TV set.
 - The TV set will turn off automatically after 4 hours without any operation on the TV set.
- + **MPX: STEREO/SAP RECEPTION**
This television is designed to receive stereo and the Second Audio Program (SAP) broadcasts where available.

1. INTRODUCTION

1.3 OPERATION OF REMOTE CONTROL
1.3.1 DESCRIPTION OF REMOTE CONTROL KEYS



4. **SLEEP BUTTON**
Set the sleep timer from 120 to 10 minutes by pressing the SLEEP button repeatedly. To display the remaining time, press the SLEEP button once. To cancel the sleep timer, press the SLEEP button until 'OFF' appears.
5. **CLOCK BUTTON**
To jump to clock setting in TV status.
6. **SOUND EFFECT BUTTON**
To switch between the 4 sound effect settings circularly : Voice, Music, Theatre, Personal
7. **PICTURE/DEL. BUTTON**
Cyclically selects the 5 picture settings: Movies-Sports-Week Signal-Multimedia -Personal.
In favourite list setting, to delete or restore a favourite channel.
8. **(0-9) DIGIT KEYS**
To select program number directly.
9. **FAV.**
To browse the preset favorite channels.
This button will not function if you have not set any favorite program.
10. **DISPLAY**
To display the current program number and function status.
Press the button once again to display
11. **VOLUME UP/DOWN BUTTON**
To decrease or increase the sound volume and picture setting level.
12. **RECALL BUTTON**
Press to return to the previously viewed channel.
13. **MENU**
Press to access the main menu (PICTURE, SOUND, FEATURE, TIMER and PRESET) or go back to the previous screen within on the screen menu.
Pressing the MENU button in the first screen of the main menu at any time will exit the menu.

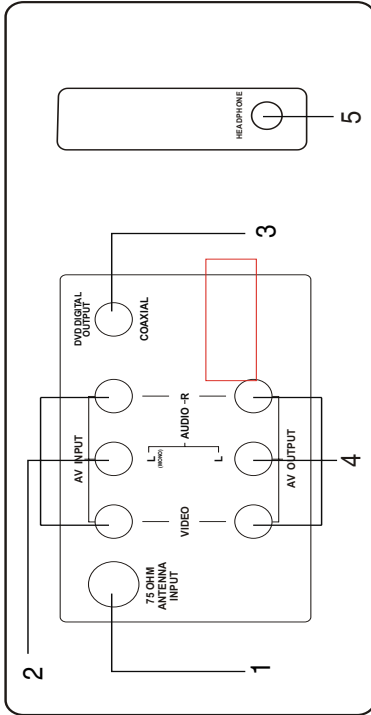
INTRODUCTION OF KEY FUNCTION

This TV features with a full-function remote handset. For a more compact remote unit design, some of the keys are multiple with more than one function. The following text describes the function of numbered keys as dictated above. Functions of keys related to DVD operation are introduced in DVD section later.

1. **STANDBY BUTTON**
When the main power is on, to turn the TV set on or off.
2. **TV/AV/DVD BUTTON**
To switch between the TV program, AV input and DVD sources.
3. **MUTE BUTTON**
To temporarily turn off the sound and to restore it by pressing it again.

1. INTRODUCTION

1.2.2 REAR & SIDE TERMINAL



1. 75 OHM ANTENNA INPUT
2. AUDIO/VIDEO IN (AV INPUT)
3. DVD DIGITAL OUTPUT/ COAXIAL
4. AUDIO/VIDEO OUT (MONITOR OUTPUT)
5. HEADPHONE OUTPUT

1. INTRODUCTION

14.MTS BUTTON

To select the sound modes cyclically: Mono, Stereo, SAP and Mono+SAP.

15.COURSOR ◀ ▶ / ▲, ▼ **” BUTTON**

To activate the selections in the menu system, or to change item settings.

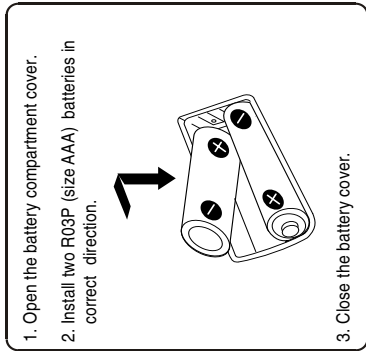
16.ENTER BUTTON

Within the on-screen menu, press to enter some special function such as Calendar, Favorite list and so on.

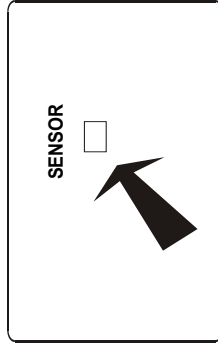
17.CHANNEL UP/DOWN BUTTON

To cyclically select the program number. To select the item in menu systems.

1.3.2 INSTALLATION OF BATTERIES



1.3.3 EFFECTIVELY USING THE REMOTE CONTROL



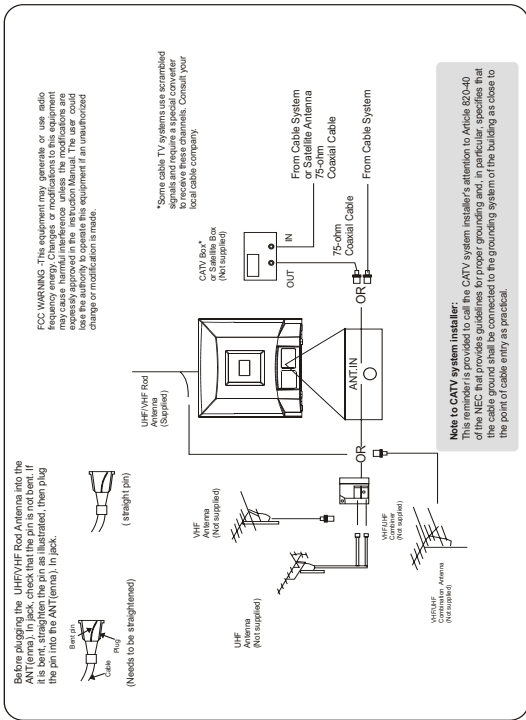
Point the remote toward the infra-red remote sensor on the main unit as shown left.

NOTES:

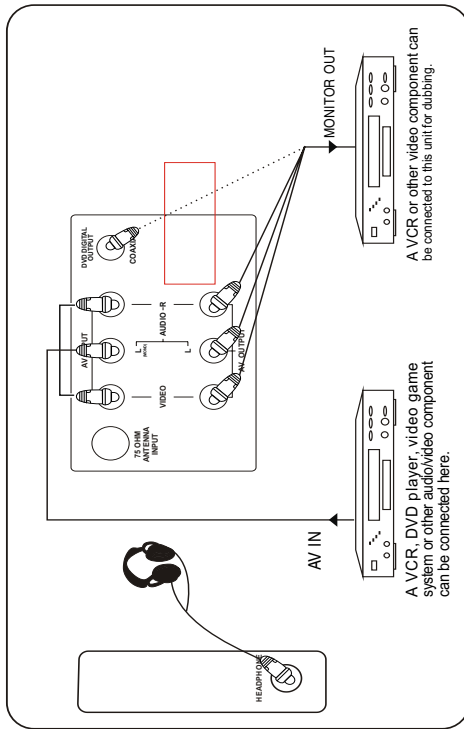
- If direct sunlight, incandescent light, or any other strong light sources hit the remote control sensor, the remote control may not operate properly.
- If there is an obstacle between the main unit and the remote control, the remote control signal may not be received.
- R03P(SIZE AAA) batteries should be used.

2. CONNECTIONS

2.1 CABLE/ANTENNA CONNECTIONS



2.2 EXTERNAL CONNECTIONS



2. CONNECTIONS

To switch between the TV channels, the connected audio/video equipment and DVD, press the TV/AV/DVD button repeatedly.

The DVD DIGITAL OUTPUT jack is optional for use. When the set is in DVD state and the receiving equipment has a coaxial jack, they can be connected.

2.3 FREE DISTANCE

For good ventilation of the set, it is suggested that a free space of at least 5CM be left between its two sides or back and the wall or anything that may be positioned to block its ventilation holes.

3. MENU OVERVIEW

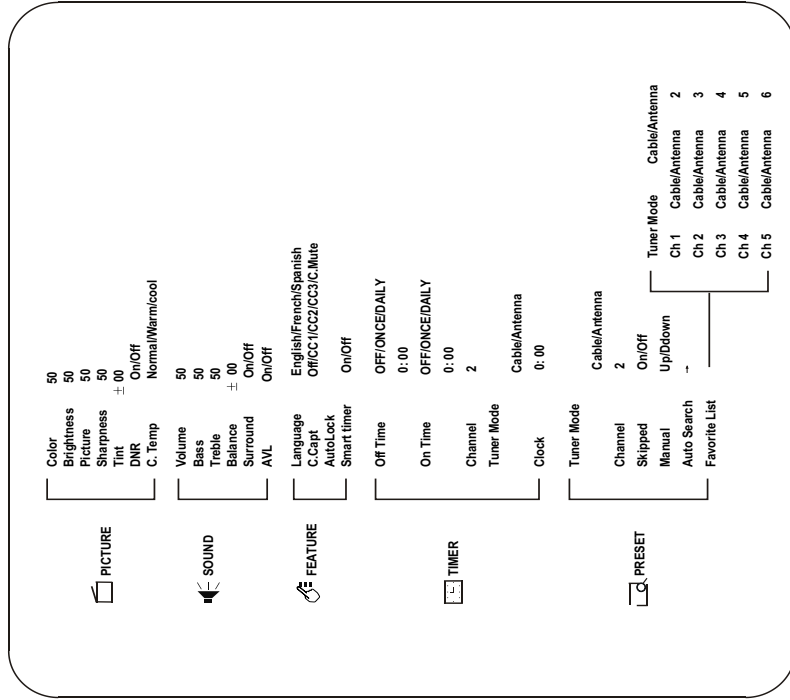
Within the on screen menu, almost all of the functions and adjustments for this television can be achieved. The MENU button is used to access the main menu or go back to the previous screen. Pressing the MENU button in the first screen of the main menu, or the TV/AV/DVD button at any time, will exit the menu.

Use the CHANNEL UP/DOWN buttons on the TV or CH+ ▲ /CH- ▼ on the remote control to scroll through the items in the menu. Use the VOLUME UP/DOWN buttons on the TV or ◀ / ▶ on the remote control to change the settings or status of the selected item and use the ENTER button on the remote control to enter the submenu for some special functions.

NOTE:

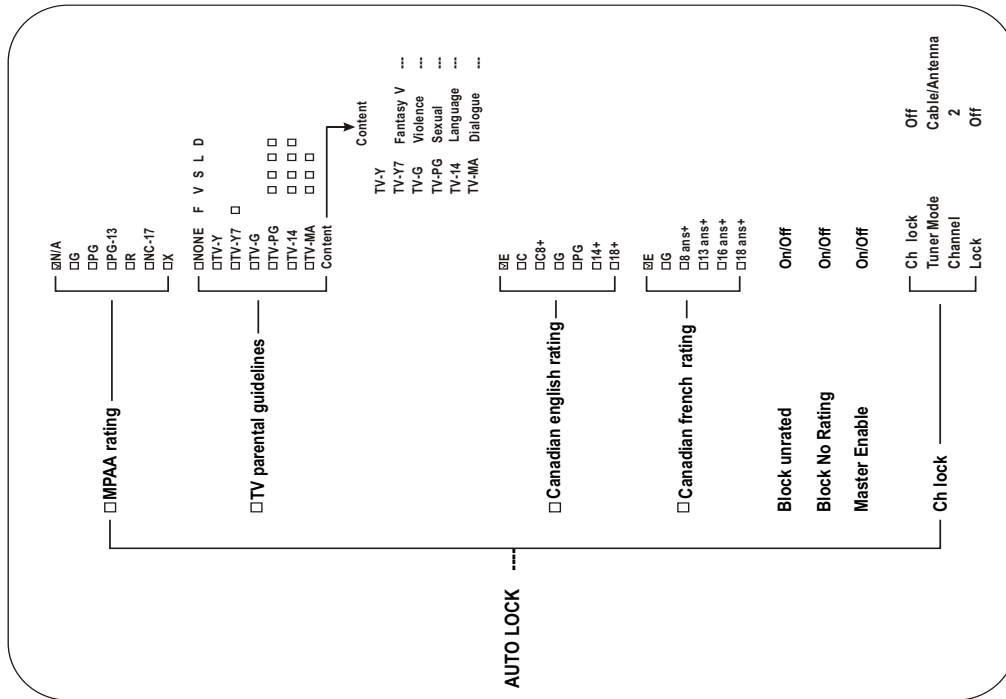
Some keys on the remote control have the same functions as those in the menu. They can be used on their own or to complement the on screen display.

3.1 MAP OF THE ON-SCREEN MENU



3. MENU OVERVIEW

3.2 MAP OF THE AUTO LOCK MENU



4. TV OPERATION

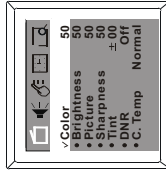
4.1 BASIC OPERATION

4.1.1 TURN ON/OFF THE TV

- Press POWER button on the main unit to turn on/off the TV set.
- Press POWER button on the remote control to switch the TV to standby mode and the standby indicator will go out. It is noticeable that PLEASE WAIT will appear on the screen before the set goes into standby mode when in DVD status.
- If the standby indicator is off, TV is in standby mode. To turn on the TV from STANDBY mode, press POWER button on the remote control or the CHANNEL UP/DOWN button on the set.

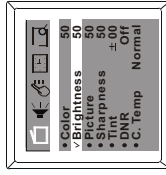
4.1.2 SELECT MAIN MENU

- By pressing the MENU button, the main menu bar will appear on the top screen, and PICTURE menu will be highlighted, which means the pull-down menu PICTURE is selected and its corresponding sub-menu will be displayed underneath it.
- Then press VOLUME UP/DOWN button on the set or ◀/▶ on the remote control, you can move the cursor right or left for selecting other pull-down menus in the main menu bar.
- Pressing the MENU button can exit the main menu.



4.1.3 SELECT SUB-MENU

- After selecting a function menu, press CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to enter the submenu. Press any of the buttons to move the cursor up/down to select one item you want to reset with a tick appearing ahead.



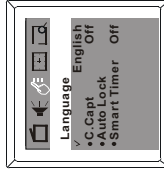
4.1.4 ADJUST OPTION

- Press VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to adjust the data or status. E.g., the Brightness is adjusted to 65% as shown.



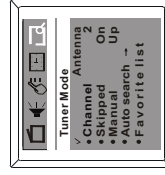
4.1.5 SELECT LANGUAGE

- You can set the TV on-screen menu to be English, French, or Spanish.
- Activate the FEATURE menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select Language.
- Press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select your desired language (English (or Spanish or French)).



4.1.6 SELECT TUNER MODE

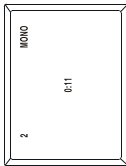
- It is important to know what type of signal-Cable or a normal antenna-you are using. To tell the TV whether you are using a Cable signal, set the Tuner Mode to Antenna or Cable as follows.
- Activate the PRESET menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select Tuner Mode.
- Press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select Antenna or Cable. Choose Cable if you have Cable TV service. If you do not have Cable TV service and you connected an antenna to the TV, choose Antenna.



4. TV OPERATION

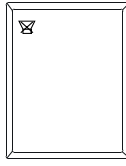
4.1.7 DISPLAY

- Press the DISPLAY button on the remote control to display the current status of the TV set, such as the current channel/No. (or VIDEO input).
- Press DISPLAY button again, the current time will be displayed on the middle screen if you set the current time in the sub-menu of TIMER.



4.1.8 MUTE

- Press MUTE button on the remote control to temporarily turn off the sound and the sign of MUTE as shown will appear on the screen. Press the MUTE button once again to restore the sound. Besides, pressing VOLUME UP button also can restore the normal sound output.



NOTE: when the sound of the set is set to 0 or MUTE, no AV audio is output.

4.2 SOUND ADJUSTMENT

4.2.1 MTS STEREO

This TV is equipped with a feature known as Multi-channel TV Sound or MTS. MTS broadcasts greatly enhance the TV viewing by bringing you programs with high fidelity stereo sound. MTS also provides an extra channel called the Second Audio Program or SAP which broadcasters can use to transmit a second language for bilingual transmission or for other purposes.

Listening to Stereo Sound

When the TV is turned on or a channel selection is made, make certain that the word "STEREO" appears on the screen. This means that "Stereo" broadcasting is available. You can enjoy stereo sound from the left and right speakers.

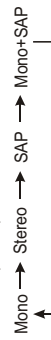
When a Mono broadcast is received, no indication is displayed.

If the broadcast signal is not strong enough or clear stereo sound is not available, press the MTS button to change to mono sound. The noise should be eliminated. Press it again to return to the stereo sound.

Listening to SAP

When the TV is turned on or a channel selection is made, make certain that the letters "SAP" appears on the screen. This means that Second Audio Program broadcasting is available.

Press the MTS button cyclically to select the desired audio setting:



4.2.2 BASS, TREBLE, BALANCE ADJUSTMENTS

- Activate the SOUND menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select **Bass**.
- Press VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to adjust to your favourable sound, e.g. adjust **Bass** to 50.
- The same adjusting procedure is applicable to Volume, Treble & Balance.

Notes:

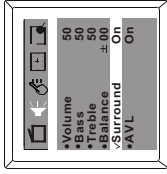
- **Bass** : Decrease the low frequency (Bass) by adjusting toward 0, increase the low frequency (Bass) by adjusting toward 100.
- **Treble** : Decrease the high frequency (Treble) by adjusting toward 0, increase the high frequency (Bass) by adjusting toward 100.

4. TV OPERATION

- **Balance** : Adjust the sound source position from left speaker to centre to right speaker as balance is adjusted from L50(-50) to R50(+50).

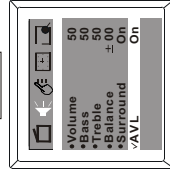
4.2.3 SURROUND SOUND

- Activate the **SOUND** menu.
- Press the CHANNEL-UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select **Surround**.
- Press the **VOLUME UP/DOWN** button on the set or ◀/▶ on the remote control to turn on/off the surround sound.



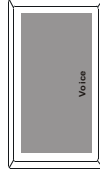
4.2.4 AVL FUNCTION

The method to turn on/off the AVL function is the same as the surround sound.



4.2.5 SOUND EFFECT SELECTION

Press S.EFFECT button on the remote control to select different sound effect to allow you to enjoy in the following sequence:

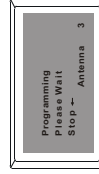
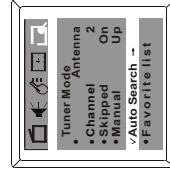


4.3. CHANNEL PRESET

Please preset all the active channels in your area to the TV set before you enjoy the TV programs.

4.3.1 AUTO SEARCH

- First select the signal source. Activate the PRESET menu, press CHANNEL UP/DOWN button on the set or CH+▲/CH-▼, then the highlight bar is on Tuner Mode. Press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select Antenna or Cable to be the signal source.
- Press CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select **Auto Search**.
- Press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to start the auto searching when the TV turns black. Then all available channels will be stored from No.1 (Cable mode) or No.2 (Antenna mode) upward in order and the TV remains black during the whole process. Auto-searching will stop after all the frequency bands are searched, and the last programme which you select before auto search action will reappear on the screen. If you want to exit auto search, just press ◀/▶ on the remote control.



NOTE:

Press and hold the MENU button on the front panel of the unit for a few seconds to start auto search action directly. Besides, if the signal source is Cable, you can get 125 programs, from channel 1 to channel 125, altogether, however, if the signal source is Antenna, 68 programs from channel 2 to channel 69.

4. TV OPERATION

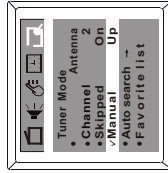
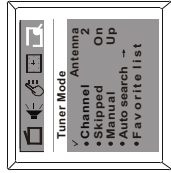
4.3.2 MANUAL TUNE

You can store the channel at your favorite position number by manual tune.

- First select the signal source. You can refer to the method introduced in **AUTO SEARCH** to realize this step.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select **Channel**, then press VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select the channel number at which you want the searched channel to be stored.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select **Manual**, then press VOLUME UP button on the set or ◀ on the remote control to start searching upward; or press VOLUME DOWN button on the set or ▶ on the remote control to start searching downward.

NOTE:

- To stop manual search, press the VOLUME DOWN button on the set or ◀ on the remote control when searching upward, or press the VOLUME UP button on the set or ▶ on the remote control when searching downward.
- When channel searching is completed, press the MENU button to quit menu, or menu will quit after a few seconds without further action.



4.3.3 PROGRAM SKIPPED

After the auto search, some fault stations may be memorized because the TV station broadcasts with different frequencies for your and your neighborhood regions. These additional stations are weak and should be removed from channel memory.

- Activate the PRESET menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select **Channel**, then press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select the channel No. you want to skip, e.g. 18.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select **Skipped**, then press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to turn on or off skipped function.

Note:

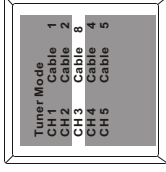
A skipped channel can not be accessed by pressing CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control. However, you can get it by means of digit buttons.

4.3.4 FAVORITE CHANNEL SETTING

You can store five favorite channels in memory and preview those channels by pressing FAV. button.

- Activate the PRESET menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select **Favorite List**.

- Press the ENTER button to display Favorite List menu entries as shown.
- When the highlight bar is on Tuner Mode, press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select Antenna or Cable to be the signal source, e.g. Cable.
- Press CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select CH 3, then press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select channel number; you want to store into this position, such as 8.
- Repeat the above procedure to set other four favorite channels.
- Press the MENU button three times to exit menu display.



4.4 OPERATION OF WATCHING TELEVISION

4.4.1 SELECTING CHANNELS

- Press CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to change the channel ascendingly/descendingly.
- Use the digit keys on the remote control directly to select the channel.

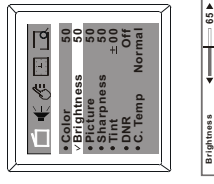
4.4.2 PICTURE ADJUSTMENT

- Adjust the level of COLOR, BRIGHTNESS, PICTURE, SHARPNESS, TINT and C.Temp to get the most favorable picture
- Activate the PICTURE menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH-▼ on the remote control to select the item, e.g. Brightness.

- Press VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to adjust the picture until you are satisfied, and the Brightness setting will be automatically stored in the memory of the TV set. The same adjustment procedure is applicable to color, picture, sharpness, tint and c.temp setting.

NOTES:

- **Color** : The saturation of color, i.e. the stronger or weaker color of picture.
- **Brightness** : Adjust for picture background level, i.e. the total brightness of picture.
- **Picture** : Adjust for black to white ratio of the picture.
- **Sharpness** : Adjust for detailed level of picture.
- **Tint** : Adjust for color tone only when watching NTSC picture.
- **C.Temp** : Adjust for color temperature with three choices: normal, warm and cool.



4. TV OPERATION

4. TV OPERATION

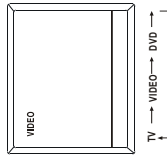
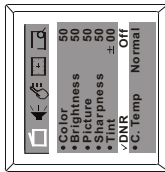
4.4.3 DNR FUNCTION

Turn this function to ON mode to get a clearer picture when the signal is poor.

- Activate the PICTURE menu.
- Press the CHANNEL DOWN button on the set or CH+▲/CH▼ on the remote control to select DNR.
- Press VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to turn it on or off.

NOTE:

- When DNR is turned to On mode, the Sharpness of the picture will be decreased.



4.5 TV/AV/DVD SELECTION

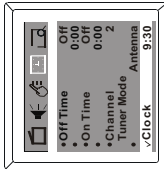
Press TV/AV/DVD button repeatedly to select the TV, AV or DVD signal sources. When the set is in DVD state, you can playback discs(see the particular instructions in DVD section). This TV set has one composite video input.

4.6 TIMER FUNCTION

Timer function is provided by the microcomputer of TV set. Once it is set, the ON/OFF time and time displaying functions can start functioning. The TV set will keep the correct time as long as the main power is on, even if the TV has been turned off into standby mode.

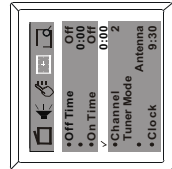
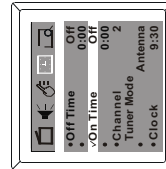
4.6.1 CURRENT TIME SETTING

- Activate the TIMER menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select Clock.
- Press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to set the current time. e.g. 9:30.
- If you want to change hour value directly, press ENTER to select hour part, then repress the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to set its value. Afterwards, press ENTER to save the setting and simultaneously exit hour setting. The method is also suitable for Off Time and On Time.



4.6.2 ON TIMER

- Turn on the TV everyday on specified time with your desired channel, on timer function provides a convenient way to do it.
- Activate the TIMER menu.
- Press the CHANNEL UP/ DOWN button on the set or CH+▲/CH▼ on the remote control to select On Time.
- Press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select among OFF, ONCE, DAILY.
- If you select DAILY or ONCE, press the CHANNEL DOWN button on the set or CH▼ on the remote control to select to 0:00 beneath On Time, then press VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to set the ON time, e.g.9:59.



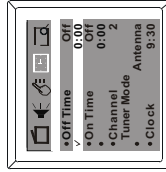
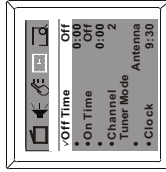
4. TV OPERATION

- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select Tuner Mode, then press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select Antenna or Cable to be the signal source.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ to select Channel, then press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select your desired channel No., e.g. 11.
- Press the MENU button to exit the menu display, or menu will quit after a few seconds without further operation.

4.6.3 OFF TIMER

To turn off the TV on specified time, off timer function will be useful to you.

- Activate the TIMER menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ to select Off Time.
- Press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select among Daily, Once, Off.
- If you select DAILY or ONCE, press CHANNEL DOWN button or CH▼ to 0:00 beneath Off Time, then press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to set the Off time, e.g.22:50.
- Press menu button to exit menu display, or menu will quit after a few seconds without further operation.



NOTES:

- Off : The timer is set to off and will not operate.
- Once : The timer is set to alarm only one time.
- Daily : The timer is set to alarm at that time everyday until otherwise adjusted
- Channel : This is the channel the TV will display at ON time.
- Tuner Mode : This is the mode the TV will display at ON time.

5. CLOSED CAPTION

You may view labeled (cc)TV programs, movies, news, prerecorded tapes, etc. with either a dialogue caption or text display added to the program.

CAPTION MODE

1. Characters can be displayed on the TV screen when the received broadcast signal contains the caption signal.
2. There are three modes for the caption display:
 Paint-on mode: Displays input characters on the TV screen immediately.
 Pop-on mode: Once characters are stored in memory, it is displayed all at once.
 Roll-up mode: Displays the characters continuously by scrolling (max. 4 lines).

TEXT MODE

To display the text on the screen by scrolling, (max. 7 lines)

NOTE:

- If the received broadcast signal does not contain the caption signal or text signal but the caption mode or text mode is selected, no change will occur.
- When your TV receives a special effects playback signal (i.e. Search, Slow, Still) from a VCR's video output channel (Ch3 or Ch4), your TV may not display the correct caption or text.
- Captions and texts may not match the TV voice exactly.
- The caption or text characters will not be displayed while the menu display or function's display is shown.
- If you see this screen:



A black box is shown on the TV screen, this means that your TV is set to text mode. To clear screen, select C.Capt to Off.

5.1 CLOSED CAPTION OPERATION

- Activate the FEATURE menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select **C.Capt**.
- Press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select a caption or text channel you want to watch.
- To cancel the caption or text mode, just set C.Capt to off.
- Press the menu button twice to exit menu, or menu will quit after a few seconds without further operation.

NOTE:

- When 'C.Mute' is selected and the MUTE function is activated (by pressing the MUTE button on the remote control), the caption transmitted in channel CC1 will be displayed on the TV screen.

6. AUTO LOCK FUNCTION

AUTO LOCK function enables parents to prevent their children from watching inappropriate channels or inappropriate material on TV.

- Activate the FEATURE menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select **Auto Lock**, press ENTER to input a four-digit password, then you can go on setting up Auto Lock. (0000 is the default password).

NOTES:

When the FEATURE menu is activated and the highlight bar is on Auto Lock, or the V-chip function is already activated, you can change the password following the steps below:

- Press the CHANNEL UP button on the set and the VOL.+ button on the remote control simultaneously.
- Input a new four-digit password with the digit keys on the remote control, and press the ENTER button. Then Auto Lock function is activated and your new password is set successfully.
- Please remember the password and don't let children know the password.

6.1 CH LOCK SETUP

CH LOCK enables parents to prevent their children from watching inappropriate channels. If the locked channel is selected to watch, 'channel lock on' message appears on the TV screen with a blue background and the sound is mute.

- After inputting the password for Auto Lock, you can enter Auto Lock setup menu. Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select CH lock and press the ENTER button, then CH lock set up menu is activated.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select Tuner Mode, and press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select Antenna or Cable to be the signal source.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select **Channel**, and press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select a channel you want to lock.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select **Lock**, and press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select On.
- If you want to lock several other channels, please repeat the above steps.
- After setting all channels you want to lock, press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select CH lock, and press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select On. It means all channels you selected have been locked.

NOTE:

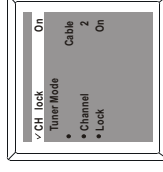
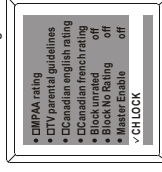
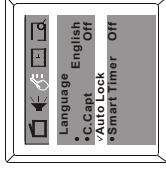
When CH Lock is on, there is no existence of PRESET submenu.

6.2 V-CHIP SETUP

This TV has a built-in V-CHIP, which can reads the ratings for programming (except for news and sports programs, unedited movies on premium cable channels, and emergency broadcast system signals), then denies access to programming if the programs rating meets the limitations you select. In this case, 'V-CHIP block active...' message appears on the TV screen together with a blue background and the sound is mute.

NOTE:

Programming may be rated by the Motion Picture Association of America(MPAA) or according to the Television Parental Guideline, Canadian English Rating or Canadian French Rating.



CC1 ← CC2 → CC3
 — Off — C.Mute

6. AUTO LOCK FUNCTION

6.2.1 MPAA RATING SETUP

- Activate the Auto Lock setup menu. Then the highlight bar is on MPAA rating as shown.
- Press ENTER button to enter the MPAA rating setup menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select the item you want to block, then press ENTER button to confirm.(the tick in the frame shows that this rating has been blocked).

NOTE:

- All the MPAA ratings shall be shown in the table below:

Selection	Rating	Category	Explanation
G	General Audience		
PG	Parental Guidance Suggested		
PG-13	Unsuitable for children under 13		
R	Restricted; under 17 requires accompanying parent or adult guardian		
NC-17	No one under 17 admitted		
X	Mature Audience Only		

- When you select a rating to block, e.g. PG, the higher rating (PG-13, R, NC-17 and X) will be blocked automatically, while the lower rating (G) will be unblocked automatically.
- When you block G rating, all the ratings will be blocked automatically.
- To unblock all the ratings, select N/A and press the ENTER button.

6.2.2 TV RATING SETUP

- Activate the Auto Lock setup menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select TV parental guidelines, then press the ENTER button to enter the TV rating setup menu as shown.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select the item you want to block, then press the ENTER button to confirm.

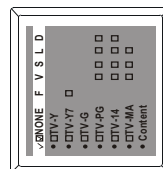
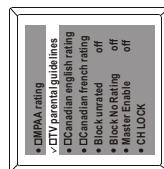
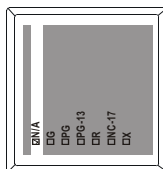
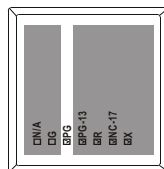
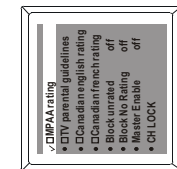
NOTE:

- All the TV ratings shall be shown in the table below:

Selection	Rating	Category	Explanation
Y	Appropriate for all children		
Y7	Appropriate for children seven and older		
G	General Audience		
PG	Parental Guidance suggested		
14	Unsuitable for children under 14		
MA	Mature Audience Only		

- All the sub-ratings shall be shown in the table below:

	TV-Y7	TV-PG	TV-14	TV-MA
F (Fantasy Violence)	<input type="checkbox"/>			
V (Violence)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
S (sexual situation)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
L (Course Language)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
D (Suggestive Dialogue)		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



6. AUTO LOCK FUNCTION

- When you select a rating to block, e.g. TV-PG, the higher rating (TV-14 and TV-MA) and their sub-ratings will be blocked automatically, while the lower rating (TV-Y, TV-Y7, TV-G) and their sub-ratings will be unblocked automatically shown as Fig.1.

- In Fig.2, you can see the sub-rating setup situation. No tick in the frame under F, V, S, L, D, which means <unblock> or <view>.

- When you block Y rating, all the ratings will be blocked automatically.

- To unblock all the ratings, select N/A and press the ENTER button.

- TV-Y7, TV-PG, TV-14 and TV-MA include sub-ratings. When you block a rating, its sub-ratings will be blocked automatically. But you can unblock the sub-ratings individually.

- 1. In the menu shown as Fig.1, press the PROGRAM UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select the item Content.

- 2. Press the ENTER button to enter the sub-rating setup menu.

- 3. Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select a rating category, e.g. TV-14 as Fig.3.

- 4. Press the VOLUME UP button on the set or ► on the remote control to start a sub-rating selection.

- 5. Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select your desired sub-rating, e.g. Language. Then press the ENTER button to turn it <block> or <view>. If you select <view>, this sub-rating in rating TV-14 is unblocked.

- 6. You can unblock several other sub-ratings of this rating category by repeating the step5.

- 7. Press VOLUME DOWN button on the set or ◀ on the remote control to exit the sub-rating selection of this category. By pressing CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control, you can select other rating category, and repeat step4, 5 to set the sub-rating <block> or <view>.

- 8. For example, if you only set the sub-ratings of TV-14 as Fig4, then press the Menu button to go back to the previous screen, the display will be shown as Fig.5, the sub-ratings (V, S, L) have been unblocked..

6.2.3 CANADIAN ENGLISH RATING SETUP

- Activate the Auto Lock setup menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select Canadian English rating, then press the ENTER button to enter the Canadian English rating setup menu.

- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select the your desired item and press the ENTER button to block it.

NOTE:

- All the Canadian English ratings shall be shown in the table below:

Selection	Rating	Category	Explanation
E	Exempt		
C	Children		
C8+	Children eight years and older		
G	General programming, suitable for all audience		
PG	Parental guidance		
14+	Viewers 14 years and older		
18+	Adult programming		

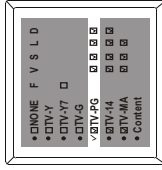


Fig.1

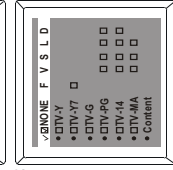


Fig.2

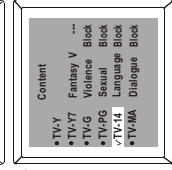


Fig.3

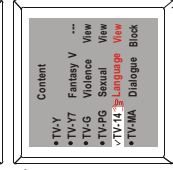


Fig.4

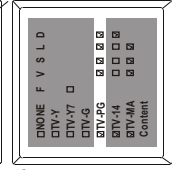
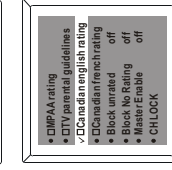
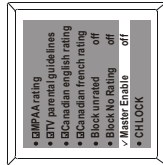
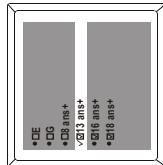
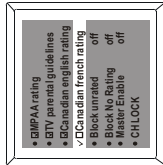
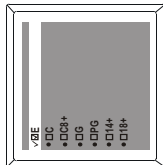
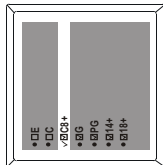


Fig.5



6. AUTO LOCK FUNCTION

- When you select a rating to block, e.g. C8+, the higher rating (G, PG, 14+, 18+) will be blocked automatically, while the lower rating (C) will be unblocked automatically.
- When you block C, all the ratings will be blocked automatically.
- To unblock all the ratings, select E and press the ENTER button.



6.2.4 CANADIAN FRENCH RATING

- Activate the Auto Lock setup menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select Canadian french rating, then press the ENTER button to enter the Canadian french rating setup menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select your desired item and press the ENTER button to block it.

NOTE:

- All the Canadian French ratings shall be shown in the table below:

Selection	Rating	Category	Explanation
E	Exémples		
G	Général		
8 ans +	Général - Déconseillé aux jeunes enfants		
13 ans +	Gette émission peut convenir aux enfants de moins de 13 ans		
16 ans +	Gette émission ne convient pas aux moins de 16 ans		
18 ans +	Gette émission est réservée aux adult		

- When you select a rating to block, the higher rating will be blocked automatically.
- When you block G, all the ratings will be blocked automatically.
- To unblock all the ratings, select E and press the ENTER button.

6.3 ACTIVATE V-CHIP

- When all your limits in four places (MPAA rating, TV parental guidelines, Canadian English rating and Canadian French rating) are set, return to Auto Lock setup menu by pressing the MENU button. Here Auto Lock offers various blocking options from which to choose:
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select **Block unrated(or Block No Rating, Master Enable)**. Press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to select On or OFF.

Master Enable: This is the “ master switch ” for Auto Lock. When ON, all the blocking /censoring you have set is enabled. When Off, all the blocking/censoring is disabled.

Block Unrated: All unrated programs (based on movie ratings or TV ratings) will be blocked if this feature is ON and Master Enable is ON.

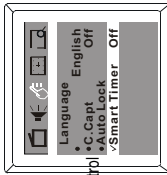
Block No Rating: All programs with NO content advisory can be blocked if this feature is ON and Master Enable is ON.

7. SUPER FUNCTION

7.1 SMART TIMER

If Smart Timer is turned on, the TV will turn off automatically after 4 hours without any operation on the set.

- Activate the FEATURE menu.
- Press the CHANNEL UP/DOWN button on the set or CH+▲/CH▼ on the remote control to select **Smart Timer**.
- Press the VOLUME UP/DOWN button on the set or ◀/▶ on the remote control to turn it on or off.



8. TROUBLESHOOTING

Sometimes a performance problem can be easily solved by checking apparent but often overlooked possibilities. Before arranging for service, check these items. It could save your time and money.

Closed Caption Problem	Possible Remedy
My TV is showing captions that are misspelled.	You are watching a live broadcast and spelling errors made by the closed captioning production company pass through uncorrected. A prerecorded program will not show any misspelled words because of the normal time available for editing the captions.
My TV will not show the text in its entirety or there is a delay of what is being said.	Captions that are delayed a few seconds behind the actual dialogue are common for live broadcast. Most captioning production company can display a dialogue to maximum of 220 words per minute. If a dialogue exceeds that rate, selective editing is used to ensure that the captions remain up-to-date with the current TV screen dialogue.
My caption are scrambled with white boxes on the screen.	Interference caused by building, power lines, thunderstorms, etc. may cause scrambled or incomplete captions to appear.
My program guide listed a TV show as being closed captioned, but none of the captions were displayed.	Broadcasters may at times use a time compression process to the actual program so that additional advertising time can be given. Since the decoder cannot read the compressed information, captions will be lost.
My prerecorded videotape does not show any caption. The tape box mentions it being closed captioned.	The videotape was either an illegal copying or the tape duplicating company accidentally left out the captioning signals during the copying process.
My TV screen show a black box on certain channels.	You are in the TEXT mode. Select CAPTION mode or CAPTION (OFF)

PROBLEM	No power	Remote control doesn't work	Bars on screen	Picture distorted	Picture rolls vertically	No color	Poor reception on some channel	Weak picture	Lines or streaks in picture	Ghosts in picture	Sounds OK, picture poor	Picture OK, sounds poor	No picture or sound	Picture blurred
POSSIBLE REMEDY	Is TV power cord connected.	Is the power switch turned on?	Try a new channel, if OK, possible station trouble is TV in standby mode?	Is antenna connected to terminal on the jack of the set?	If outside antenna is being used, check for broken wire.	Check for local interference.	Turn off the power switch and then turn it on after one minutes.	Adjust color control.	Adjust CONTRAST & BRIGHTNESS control	Check batteries in remote control				

9. SPECIFICATION

MAIN UNIT

TV Receiving System	NTSC-M
AV Colour System	PAL4.43, NTSC3.58 & NTSC4.43
Closed Caption System	15.119/FCC
Channel Coverage	VHF 2-13 UHF 14-69 CATV 2-13, a-w, w+1 ~w+84, A-5-A-1, 5A
Tuning system	181 Channel Frequency synthesized tuning system
Channel Access	Direct Access Keyboard Programmable Scan Up/Down
Language of OSD	English, French and Spanish
Antenna Input	VHF/UHF/CATV 75OHM Unbalanced (F-Type)
CRT Size	54CM(Diagonal)
Video Input/Output	75-ohm 1.0Vp-p, RCA
Audio Input	10k ohm 0.5 Vrms, high impedance
Audio Output	1k ohm 0.5 Vrms
Audio Output Power	≥ 4W+4W
Operating Voltage	120V~, 60Hz
Power Consumption	98W
Dimensions	510 X 484 X 491 MM
Net Weight	28 kg

INFRA-RED REMOTE CONTROL

Features	Full Function Remote Control
Effective Distance	8 meters
Power Supply	DC 3V (two batteries, size AAA)

PACKING LIST

1. TV set - one set
2. Remote Control Handset - one set
3. Operation Manual - one pc

Product is subjected to change without notice.

10. INTRODUCTION

Introduction of product functions

This appliance adopts Taiwan MTK latest-generation DVD decoder chip that integrated functions of decoder and server. It supports full functional DVD playback modes including 8 languages, 32 subtitles and 9 angles. The appliance can play DVD, DVD+RW, DVD+R, super VCD, VCD, DVCD, CD, CDR and CDRW discs. In addition, MP3 and Picture CD are also playable.

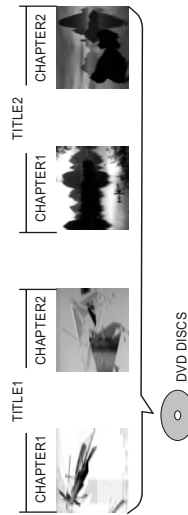
The player has the following features:

- The latest laser-head with super error-correction capability.
- 10-bit/27MHz video D/A converter with up to 500-line horizontal resolution.
- 24-bit/192KHz audio D/A converter with high-quality DVD audio output.
- 16:9 and 4:3 TV screen aspect ratio support.
- Parental Lock Level control system.
- Multi-angle playback selection.
- Multi-lingual playback.

Differences in disc composition

DVD

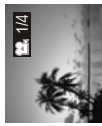
All discs are divided into smaller, more manageable sections so that you can find specific content more easily. DVD discs are divided into one or more titles. Each title may be further divided into several chapters. Occasionally, a chapter may contain index points, effectively dividing the chapter up into several parts, too.



11. OPERATION GUIDE

Multi-angle

You can view scenes from different camera angles when watching movies or other media with multiple angle playback available.



Multiple languages

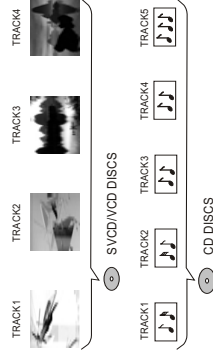
You can select the expected language on when watching movies or discs that have multiple languages and/or audio soundtracks recorded on them.

Multi-language subtitles

You can select the expected subtitle language or turn subtitles off when watching movies or discs that have multi-language subtitles recorded on them.

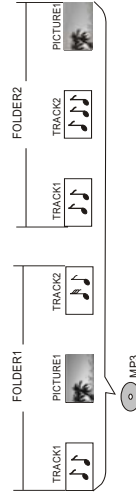
SVCD/VCD/CD

SVCD/VCD/CD are divided into a number of tracks. A track may contain a number of index points occasionally, which effectively divides the track up into several parts.

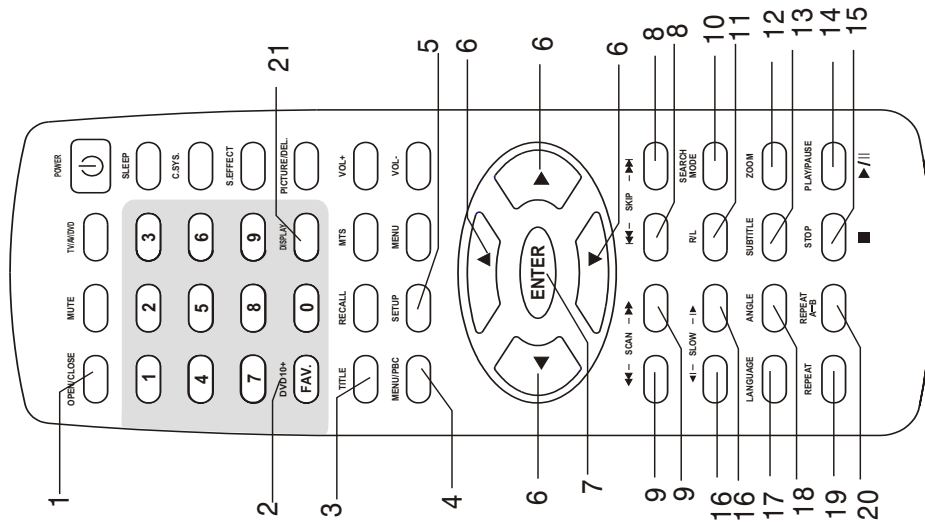


MP3/JPEG

MP3 (MPEG1 audio layer 3) is a compressed audio file format. Files are recognized by their file extension ".mp3" or ".MP3". JPEG is a compressed image file format. Files are recognized by their file extension ".jpg" or ".JPG". Please refer to MP3 playing on page 32 and JPEG playing on page 33 for details.



12. DIAGRAM OF REMOTE CONTROL



- | | | |
|---------------|-----------------|----------------|
| 1. OPEN/CLOSE | 8. SKIP | 15. STOP |
| 2. DVD10+ | 9. SCAN | 16. SLOW |
| 3. TITLE | 10. SEARCH MODE | 17. LANGUAGE |
| 4. MENU/PBC | 11. R/L | 18. ANGLE |
| 5. SETUP | 12. ZOOM | 19. REPEAT |
| 6. CURSORS | 13. SUBTITLE | 20. REPEAT A-B |
| 7. ENTER | 14. PLAY/PAUSE | 21. DISPLAY |

13. BASIC OPERATION

OPEN/CLOSE



● Press to open or close the DVD tray.

DVD10+



● Press OPEN/CLOSE button or ▲ on the set when in AV or TV status, it will turn to DVD status automatically..

① Press DVD10+ button to select two or three-digit item. The times of pressing this button decide the first bit. Anyway it will be limited by the sum of items.

② For example, press DVD10+ button once, "1-" will be displayed, press any digit key, take 5, the 15th item will be selected and played. Press DVD10+ button twice, "2-" will be displayed, press any digit key, take 5, the 25th item will be selected and played.

TITLE



● Press TITLE button to access the title menu of the disc.

② Select the item with the CURSOR buttons then press ENTER to start playback.

③ Or press the NUMBER buttons to play the corresponding chapter directly.

Notes:

This operation is only available for DVD discs. Some discs may directly begin playback after data reading.

MENU/PBC



When a DVD disc is played:

① Press MENU/PBC button and the main menu of the disc will be displayed on the TV screen. Menu screen varies with the disc.

② Select the item with the CURSOR buttons then press ENTER to start playback.

③ Or press the NUMBER buttons to play the corresponding chapter directly.

When a VCD disc is played:

① Press MENU/PBC button to select PBC on or off. When PBC is on, a menu will be displayed for some discs..

② Press the NUMBER buttons to play the corresponding chapter directly. If you do not choose any one, it will playback from the first one sequentially.

③ During playback when PBC is off, press MENU/PBC to change PBC back to on and the disc will go back to its beginning. When PBC is on and during playback of the first selected one you press NUMBER buttons to select another chapter, you will see PBC OFF appear left top, which means PBC becomes off automatically. PBC OFF will not appear again later.

Note: This operation is only available for VCD discs of version 2.0 and above.

Sequential playback

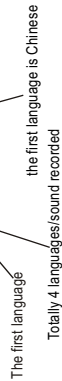
- VCD 1.0 and 1.1 discs are only available for sequential playback mode. Sequential playback mode will be accessed directly after disc reading for these discs.
- Under sequential playback mode, you can press the NUMBER buttons to play the corresponding chapter directly. Number buttons are available during playback.
- With some discs, playback may start directly after data reading. Note: The sequential playback mode is only available for VCD and SVCD.

LANGUAGE



- Press LANGUAGE repeatedly to toggle between up to 8 audio languages or sound when the disc is recorded with multi-languages.

Example: AUDIO 1/4:AC-3 5.1CH CHINESE



For DVD karaoke discs, press LANGUAGE to alternate between music and artist vocal.

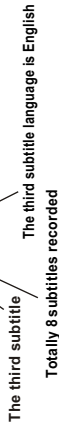
Note: this function is only available for DVD and Super VCD discs.

SUBTITLE



- Press SUBTITLE repeatedly to toggle between up to 32 subtitle languages when the disc is recorded with multi-subtitles.

Example: SUBTITLE 03/08: ENGLISH



Note: This function is only available for DVD and Super VCD discs. Total number of subtitle differs depending on the disc.

ANGLE



- Press ANGLE repeatedly to toggle between up to 9 viewing angles when scenes recorded in the disc was shot with multiple cameras from different angles.



Note: this function is only available for some DVD discs.

DISPLAY

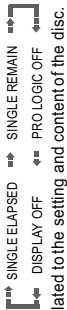


- Press DISPLAY button repeatedly and the below disc information will be displayed in sequence circularly on TV screen:

For DVD discs



For VCD discs

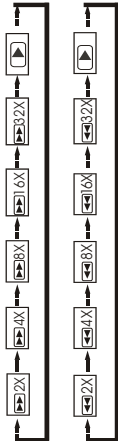


Note: The above displayed information is related to the setting and content of the disc.

←← SCAN →→



- Press ←← SCAN or SCAN →→ button on remote control to fast search forward or reversely.

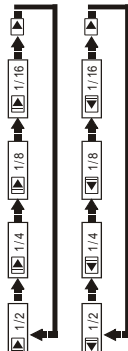


- Press PLAY/PAUSE button to resume normal playback speed.

← SLOW →



- Press ← SLOW or SLOW → button on remote control to play the disc in forward or reverse slow motion.



- Press PLAY/PAUSE button to resume normal playback speed.

Note: SLOW REVERSE function is only available for DVD discs.

←← SKIP →→



- Press ←← SKIP →→ button on remote control to skip forward to the next chapter.

- Press ←← SKIP button on remote control once to skip back to the current chapter(DVD) or track (VCD or CD).

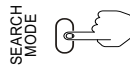
- Press ←← SKIP button on remote control twice to skip backward to the beginning of the previous chapter or track.

Note: playback resumes in a normal speed after skipping to the beginning of a chapter.



- Press R/L button to switch the channel mode.

Note: R/L button is for SVCD, VCD and CD discs only.



- Press SEARCH MODE button once, you can see a dwindled playback picture appear above and search information menu below. If you want to exit, repressing the button is OK and the playback picture will return to its normal size. For DVD discs and VCD ones, the search information displayed is different. We will make introduction in detail respectively.

For DVD discs

- The search information includes: TITLE, CHAPTER, AUDIO, SUBTITLE, ANGLE, TT TIME, CH TIME, REPEAT and TIME DISP. You can select a certain item by CURSOR ▲ or ▼. When a certain item is selected, press ► to change its status or value. Then press ENTER to save your setting. Press ◀ to go back to option volume.

- For example:

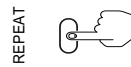
```
TITLE      02/03
CHAPTER   06/26
AUDIO     5-1 CH CHINESE
SUBTITLE  OFF
```

02 is the desired title number and 03 is the total title number.
06 is the desired chapter number and 26 is the total chapter number.
(The exact total number of title or chapter differs depending on the disc.)
Time format: HOUR:MINUTE:SECOND

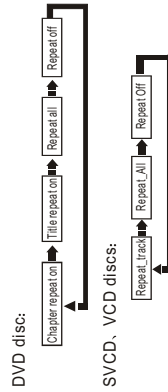
- Note: For TT TIME (means title total time) and CH TIME (means chapter time), you can input your desired value, after you finish inputting, the playback picture will jump to where the time corresponds to. But the displayed time remains unchanged.

For VCD discs:

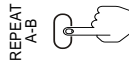
- The search information includes: TRACK, DISK TIME, TRACK TIME, REPEAT and TIME DISP.
- Operation procedures are the same as for DVD discs.



- Press REPEAT button to switch the repeat mode in below sequence:

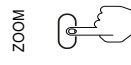


Notes: Repeat playback is only available in PBC OFF mode for VCD2.0 and Super VCD discs.



- Press A-B button once to set the repeated playback start point. ◁ A will be displayed on TV screen.
- Press A-B button again to set the repeated playback end point. ▷ AB will be displayed on TV screen and the cycle begins.

- Press A-B button for the third time to cancel A-B repeated playback. A sign that is the same with REPEAT state will be displayed on TV screen.

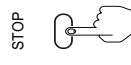


- During playback, press ZOOM button to zoom in or out the current picture to 2, 3, 4, 1/2, 1/3, 1/4 and 1 time of the original size sequentially and circularly.



- When the picture is large than the TV screen can display, you can use CURSOR buttons to move the picture.

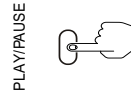
- Press ZOOM repeatedly until the original picture size is resumed.



- During playback, press STOP button once and the player will be in PRESTOP mode (memory stop), then press PLAY/PAUSE button to resume playback from the stop point.

- Press STOP button twice and the player will be in STOP mode, then press PLAY/PAUSE button to start playback from the beginning of the disc.

Notes: This function is only available for DVD and VCD (in sequential playback mode). Initial setting to function setup will not be available in PRESTOP mode.



- During playback, press PLAY/PAUSE button on the remote control to pause playback. A still picture of the pause point will appear on the TV screen.

- When playback paused, press PLAY/PAUSE button again to resume playback from the pause point.

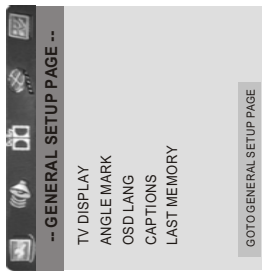
14. BASIC SETTING

To achieve to the best effect of the DVD player, you may need to perform initial setting according to the content of the disc and peripheral equipment. Details of all the adjustable functions will be described later in this chapter. Press **SETUP** to access the setup menu directly and press **CURSOR** to repeat setup page in below sequence. To be noticeable, **PREFERENCE SETUP** page can be accessed only when DVD is in **STOP** status. And during playback, the cycle will be jumping from **VIDEO SETUP** to **GENERAL SETUP** directly.

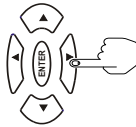


GENERAL SETUP

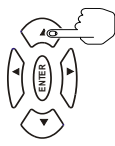
SETUP



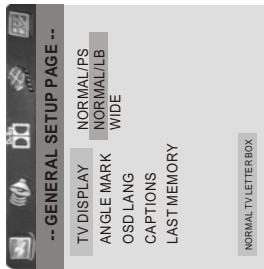
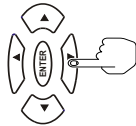
Use **cursor** buttons to enter the current page and press **cursor** to select the desired setup option. When selected, the option item is highlighted with its submenu on the right meantime and relevant description appears in left-bottom corner.



As the above picture shows, **TV DISPLAY** is chosen and has three different forms. Now it is **NORMAL/PS**. If you want to change its form to another form, you use **CURSOR** to see the high lighted bar changes its color to the same with **TV DISPLAY**s. Simultaneously, the relevant description in the left-bottom corner will change. The following picture tells that.



Then press **cursor** to select one form. For example, **NORMAL/LB** is selected. Then press **ENTER** to confirm and save the setting.






You can press **CURSOR** to go back to the previous menu any time and follow the procedures above to go on with other settings. Pressing **SETUP** at any time can clear the menu off.

We make a further explanation about all the items as follows:

TV DISPLAY

- The width-to-height ratio of conventional TV is 4:3, while the one of wide screen TV is 16:9. This width-to-height ratio is called the aspect ratio. When viewing discs recorded in different aspect ratio, the image's width-to-height ratio can be switched to match the TV or monitor being used.
- There are three sub-items for item **TV DISPLAY**: **NORMAL/PS**, **NORMAL/LB** and **WIDE**. Select **NORMAL/PS** or **NORMAL/LB** according to your preference when using a conventional TV, select **WIDE** when using a wide screen TV.

DVD/Super VCD screen size format	Setting and Appearance
<p>Viewing discs recorded in 16:9 aspect ratio on a standard 4:3 TV</p> <p>Wide screen format DVD The Letter Box presentation places black bars at the top and bottom portions of the screen to provide the full wide screen presentation of a movie on a standard TV (4:3 aspect ratio)</p>	 <p>Set to NORMAL/LB</p>
<p>Wide screen format DVD / Super VCD The Pan & Scan presentation crops both sides of the wide screen presentation to use the full standard TV screen.</p>	 <p>Set to NORMAL/PS</p>
<p>Wide screen format DVD / Super VCD (unnatural squeezed effect) When viewing a wide screen format DVD or Super VCD on a standard TV and TV DISPLAY is set to WIDE, the picture may appear 'squeezed' on the screen. To remedy this condition, select either NOREMAL/LB or NOR-MAL/PS.</p>	 <p>Set to WIDE</p>

Note:

- Whether the aspect can be switched or not depends on the disc.
- Some discs may not include the screen format selected in the TV DISPLAY setting. In this case, the standard TV screen format available on the disc is automatically selected.

ANGLE MARK

- ON: angle mark will appear in top-right corner of the TV screen
- OFF: angle mark will be invisible.



Note: this function is only available for DVD discs that have scenes recorded from multiple angles.

OSD LANG

On-Screen Display Language consists of **ENGLISH**, **FRENCH** and **SPANISH**. When selected, all on-screen display information for **SETUP MENU** and remote control operation will be in the relevant language.

CAPTIONS

- ON: CAPTIONS will view on-screen closed caption.
- OFF: CAPTIONS will be invisible.

Note: This function is only available for certain DVD discs.

LAST MEMORY

- ON: When you change the set status from DVD to TV and back to DVD again, the DVD playback will remain where it was before you did the change.
- OFF: Turn off the last memory function.

ANALOG AUDIO SETUP



This setting is used to control sound from speaker of this set itself.

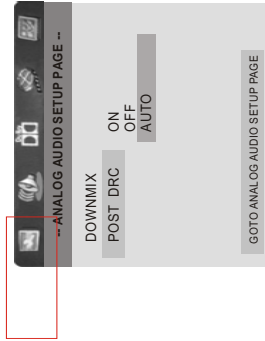
DOWNMIX

L/R/T. Output mixed two-channel audio encoded with Dolby DOWNMIX method, which can be reverted back to multi-channel audio via an amplifier with Dolby Pro Logic decoder.

STEREO: This is a Dolby Stereo audio effect. Signals of multi-channel audio are mixed into the left and right channel, so sound from channels other than left and right can be heard.

POST DRC (Dynamic Range Compression)

There are three options: ON, OFF and AUTO.




15. MP3/PICTURE CD PLAYBACK

MP3/PICTURE CD Playback

REPEAT FOLDER
Repeat all the tracks inside the selected folder.

REPEAT ONE
Repeat only the selected track inside the selected folder.

RANDOM
Play tracks inside the selected folder.

 **JPEG PICTURE PLAYBACK**

Same as MP3 CD. JPEG picture play modes also include **FOLDER, SHUFFLE, REPEAT FOLDER** and **REPEAT ONE**.

Some MP3 CD and other discs also contain JPEG picture files, which can be viewed with the DVD player.

Basic operation for Picture CD playback:

ZOOM

While a picture is being displayed, press **ZOOM** and "ZOOM 100%" will appear on screen, and then you can press **F.F.** button to enlarge the picture up to 200% and **F.R.** button to make it smaller up to 50%.

Notes: When a picture is enlarged, use **CURSOR** (▲ ▼ ► ◀) buttons to move the picture. While moving, in top-left corner of the screen will respectively appear **PAN LEFT, PAN RIGHT, PAN UP, PAN DOWN**, which will remain for about 3 seconds.

ROTATING

While a picture is being displayed, press **CURSOR** (▲ ▼ ► ◀) buttons to rotate the picture. **LEFT** and **RIGHT** buttons: each pressing rotate picture by 90°, press four times to resume the original position.

UP button: each pressing flip the picture horizontally, press twice to resume the original position.

DOWN button: each pressing flip the picture vertically, press twice to resume the original position.



15. MP3/PICTURE CD PLAYBACK

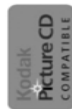
PICTURE PREVIEW:

While a picture is being played, press **STOP** button to access the preview screen. Use **CURSOR** (▲ ▼) buttons to select the preferred picture and press **ENTER** to play.

Notes: in preview mode, you can also select "slide show" or view the menu description.

KODAK PICTURE CD PLAYBACK:

Kodak Picture CD looks exactly the same as a common Compact Disk. It can be ordered in a Kodak color photograph shop with "Kodak Picture CD" logo when developing and printing 135mm color film or APS (Advanced Photograph System) film. The shop will develop and print your film and store all your photos in a compact disk. This Kodak Picture CD can be slide shown with the DVD player. Each picture will be adjusted pro rata to fit the TV screen. All pictures can be zoomed, rotated and changed slide-showing style as stated above.








Kodak Picture CD mark

Environment:	working temperature : 0 ~ 40C working humidity : 10% ~ 80%
Video:	Color system : PAL/MUL T/INTSC DVD horizontal resolution : 500 line SVCD horizontal resolution : 350 line VCD horizontal resolution : 230 line
Audio:	Signal to noise : ≥ 95 dB Frequency response : 20 Hz ~ 20 KHz ± 1 dB Distortion and noise : ≤ -70 dB Dynamic range : > 80 dB Crosstalk : ≥ 80 dB

Above disc type mark can be found on disc labels or discjackets.
CDR and CDRW discs recorded in CD Audio or VideoCD format, or with MP3 audio files, are also playable.

CAUTION!

- CDR/CDRW discs recorded using a personal computer or a CD recorder may not play if the disc is damaged or dirty, or if there is dirt or condensation on the player's lens.
- If you record a disc using a personal computer, even if it is recorded in a compatible format, there are cases in which it may not play because of the settings of the application software used to create the disc. (Check with the software publisher for more detailed information.)

Playable discs types and marks	Diameter / Playable sides	Disc features and playback time
DVD video 	DVD video	Digital audio, digital video
	12cm single-sided 1 layer	MPEG2, moving pictures + sound
	2 layer	135 min.
	12cm double-sided 1 layer	270 min.
	2 layer	270 min.
		540 min.
	DVD video	Digital audio, digital video
	8cm single-sided 1 layer	MPEG2, moving pictures + sound
	2 layer	45 min.
	8cm double-sided 1 layer	70 min.
	2 layer	83 min.
		152 min.
Super VCD 	Super VCD	Digital audio, digital video, MPEG2
	12cm single-sided	1/2, 2/3, moving pictures + sound
	8cm single-sided	40 min.
		10 min.
VCD 	VCD	Digital audio, digital video,
	12cm single-sided	MPEG1, moving pictures + sound
	8cm single-sided	74 min.
		20 min.
CD 	CD	Compressed digital audio
	12cm single-sided	74 min.
	8cm single-sided	20 min.
MP3 	MP3 discs 12cm single-sided	Compressed digital audio Up to 170 songs, 12 hr.

18. TROUBLESHOOTING

Problem	Possible cause	Solution
Playback is not possible	The disc is not compatible or seriously damaged.	Only use playable discs.
	The disc is loaded upside down.	Make sure the label side is facing up.
	The disc is above the Parental Lock Level.	Turn off the Parental Control.
	Condensation inside the player.	Turn on the player to warm up for about 30 min.
No picture	The video cable is not connected properly	Connect the video cable properly.
	The TV is not set up properly.	Set the TV input to AV, S-video or Component Video and press VIDEO button on remote control to match the video output of the player.
Distorted picture or black-and-white picture	Output color system (NTSC/PAL) does not match the TV color system.	Press SYSTEM button to switch to the appropriate color system.
	The disc is not clean or scratched.	Clean the disc or replace the disc.
No sound	The audio cable is not connected properly	Connect the audio cable properly.
	MUTE is on.	Press the MUTE button again.
	Audio is set to digital output	Reset the audio output or use SMART KEY function.

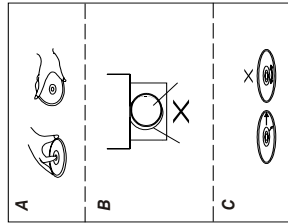
17. DISC MAINTENANCE

Handling disc

- Holding the disc by the edges so the surface will not be soiled with finger prints. (A)
- Do not scratch the disc. Do not write on the label side with a pen.
- Be careful not to drop or bend the disc.
- Do not install more than 1 disc on the disc tray.
- Do not try to close the disc tray when the disc is not installed in the tray properly. (B)
- Be sure to store the disc in a disc case after playback.
- Keep the disc away from direct sunlight, heat sources, humid or dusty areas.

Cleaning disc

- If the surface of the disc is soiled, wipe the disc outwards from the center with a soft, damp (water only) cloth. (C)
- (If wipe the discs in a circular motion, circular scratches are likely to occur, which will cause noise.)
- Do not use any type of solvent such as thinner, benzine, commercially available cleaners or antistatic spray.
- If the disc is brought from a cold to a warm environment, moisture may form on the disc. Wipe this moisture off with a soft, lint-free cloth before using the disc.



19. REGION CODE

Region Management Information

Region Management Information: This player is designed and manufactured to respond to the Region Management Information that is recorded on a DVD disc. If the Region number described on the DVD disc does not correspond to the region number of this year, this player cannot play this disc.

EXAMPLE:

IF THE Region number for this player is 1.



This product incorporates copyright protection technology that is protected by method claims of certain U.S. Patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.



20. LANGUAGE CODE

Abkhazian	6566	Inupiaq	7375	Pushto	8083
Afar	6565	Irish	7165	Russian	8285
Afrikaans	6570	Isienska	7383	Quechua	8185
Amharic	6577	Italiano	7384	Raeto-Romance	8277
Arabic	6582	Ivrit	7269	Romanian	8279
Armenian	7289	Japanese	7465	Rundi	8278
Assamese	6583	Javanese	7486	Samoan	8377
Avestan	6569	Kalaallisut	7576	Sango	8371
Aymara	6589	Kannada	7578	Sanskrit	8365
Azerbaijani	6590	Kashmiri	7583	Sardinian	8367
Bahasa Melayu	7783	Kazakh	7575	Serbian	8382
Bashkir	6665	Kernewek	7587	Shona	8378
Belarusian	6669	Khmer	7577	Siqip	8381
Bengali	6678	Kinyarwanda	8287	Sindhi	8368
Bhatri	6672	Kirghiz	7589	Sinhalese	8373
Bišama	6673	Komi	7586	Slovensky	8373
Bokmal, Norwegian	7866	Korean	7579	Slovenian	8376
Bosanski	6683	Kuanyama, Kwanyama	7574	Somali	8379
Brezhoneg	6682	Kurdish	7585	Sotho, Southern	8384
Bulgarian	6671	Lao	7679	South Ndebele	7882
Burmese	7789	Latina	7665	Sundanese	8385
Castellano, Espanol	6983	Latvian	7686	Suomi	7073
Catalan	6765	Letzeburgesch;	7666	Swahili	8387
Chamorro	6772	Limbürgin, Limburger	7673	Swati	8383
Chechen	6769	Lingala	7678	Svenska	8386
Chewa; Chichewa; Nyanja	7889	Lithuanian	7684	Tagalog	8476
中文	9072	Luxembourgesch;	7666	Tahitian	8469
Chuang; Zhuang	9065	Macedonian	7775	Tajik	8471
Church Slavc; Slavonic	6785	Malagasy	7771	Tamil	8465
Chuvash	6786	Magyar	7285	Taar	8484
Corsican	6779	Malayalam	7776	Telugu	8469
Cesky	6783	Maltese	7784	Thai	8472
Dansk	6865	Manx	7186	Tibetan	6679
Deutsch	6869	Maori	7773	Tigrinya	8473
Dzongkha	6890	Marathi	7782	Tonga (Tonga Islands)	8479
English	6978	Marshallese	7772	Tsonga	8483
Espananto	6979	Moldavian	7779	Tswana	8478
Estonian	6984	Mongolian	7778	Turkce	8482
Euskara	6985	Nauru	7865	Turkmen	8475
Ežnyavici	6976	Navaho; Navajo	7886	Twi	8487
Faroese	7079	Ndebele, North	7868	Uighur	8571
Francais	7082	Ndebele, South	7882	Ukrainian	8575
Frysk	7089	Ndonga	7871	Urdu	8582
Fijian	7074	Nederlands	7876	Uzbek	8590
Gaelic; Scottish Gaelic	7168	Nepali	7869	Vietnamese	8673
Gallegan	7176	Norsk	7879	Velapuk	8679
Georgian	7565	Northern Sami	8369	Walloon	8765
Gikuyu; Kikuyu	7573	North Ndebele	7868	Welsh	6789
Guarani	7178	Norwegian Nynorsk	7878	Wolof	8779
Gujarati	7185	Occitan; Provençal	7967	Xhosa	8872
Hausa	7265	Old Bulgarian; Old Slavonic	6785	Yiddish	8973
Herero	7290	Oriya	7982	Yoruba	8979
Hindi	7273	Oromo	7977	Zulu	9085
Hiri Motu	7279	Ossetian; Ossetic	7983		
Hrvatski	6779	Pali	8073		
Ido	7379	Panjabi	8065		
Interlingua (International)	7365	Persian	7065		
Interlingue	7365	Poliski	8076		
Inuktitut	7385	Portugues	8084		

4. Mechanical Instruction

4.1 Chassis Overview

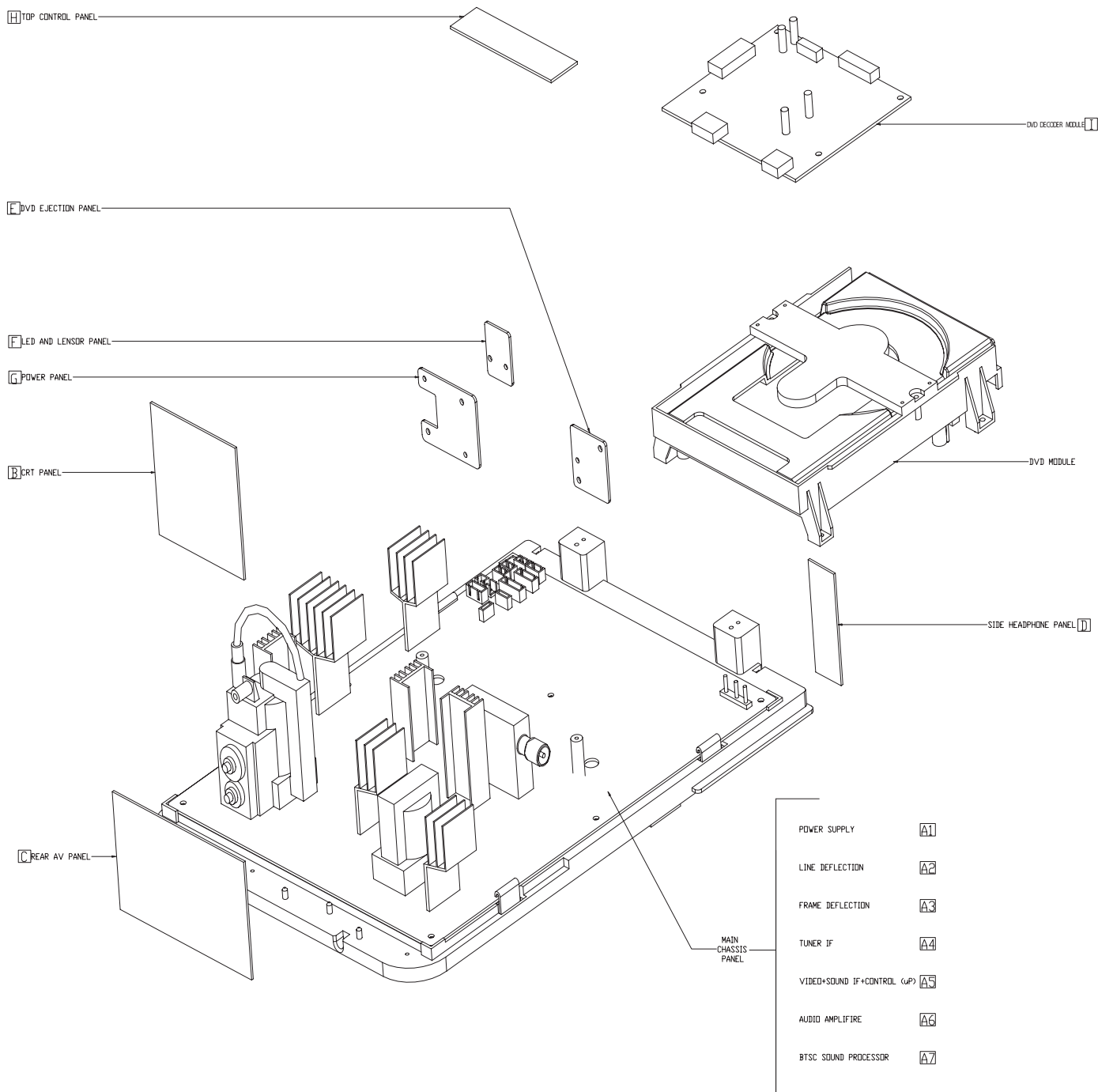


Figure 4-1 Chassis Overview

4.2 Exploded Views

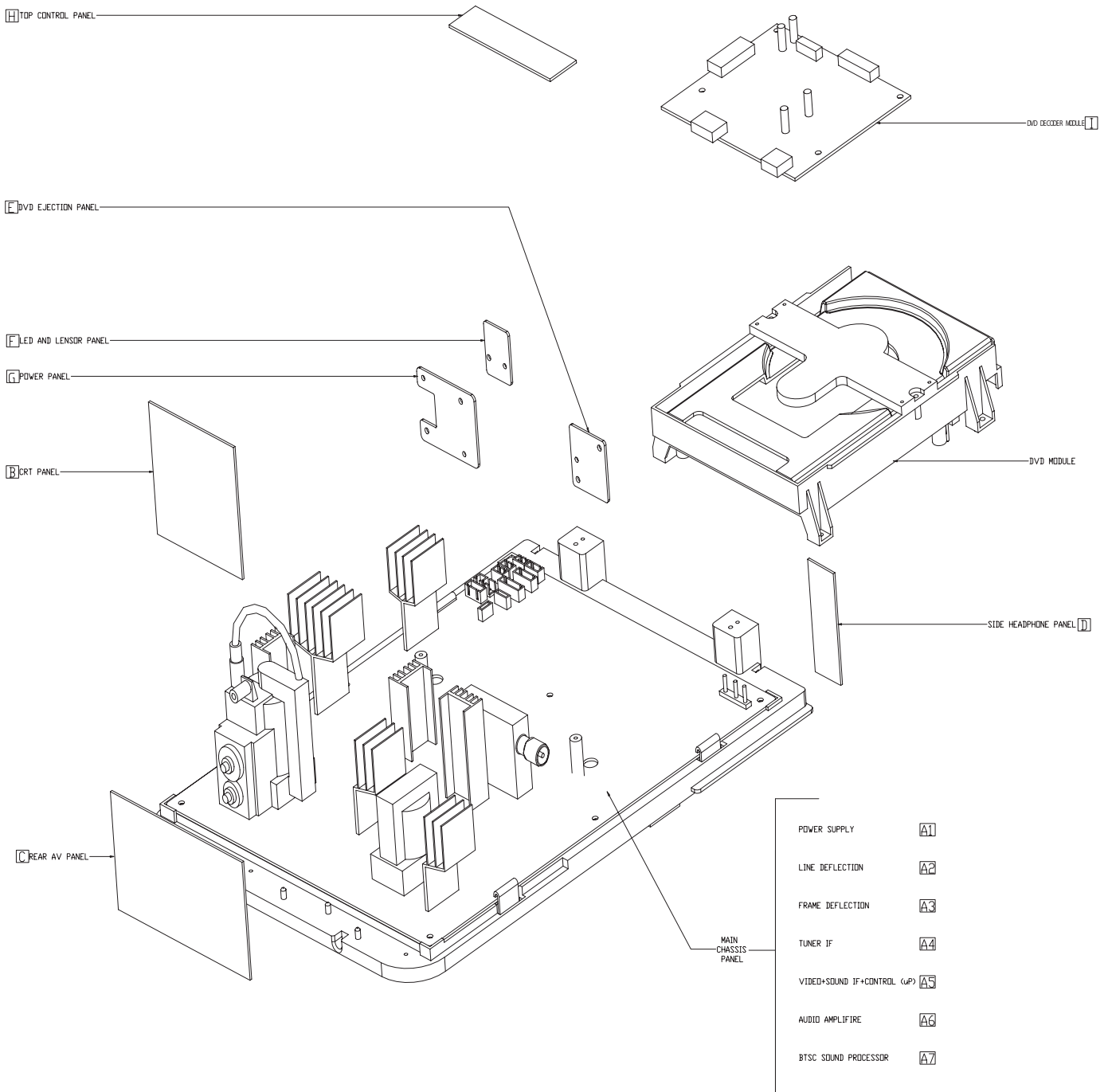


Figure 4-2 Exploded Views

4.3 Parts list of Exploded Views

NO.	Part Name	Part NO.	Total
1	DVD RFRONT ANEL	56-379320-1UN01	1
2	DVD SWITCH KNOB	56-379680-1HA01	1
3	SPRING KNOB	67-X24283-0E0	1
4	LENS	56-R213LE-OHC01	1
5	PCB IR RECEIVE BD	42-TD21S9-IRA	1
6	S/T SCREW B 3*8 BT	63-B30080-BT4	1
7	SPEAKER 8OHM 5W	42-50908D-BX1	2
8	S/T SCREW B3*12 AB	63-B30120-AB4	8
9	SPEAKER 16OHM 8W	42-G3516F-BX1	2
10	S/T SCREW B3*12 AB	63-B30120-AB4	4
11	FRONT CABINET	55-R213FC-2UN01	1
12	FUNCTION INLAY	58-379660-0UI01	1
13	PUSH BUTTON	56-D166FB-0UA01	1
14	S/T SCREW W3*10AB	63-W30100-AB4	2
15	CRT METAL MTG	67-325570-1E0	4
16	S/T SCREW B 4*15AB	63-B40150-AB4	20
17	S/T SCREW W 3*10AB	63-W30100-AB4	8
18	POWER INLAY	58-380690-0UI01	1
19	POWER KNOB	56-R213PK-0HA01	1
20	SPRING	67-X24970-0E0	1
21	POWER ADAPTER	62-368420-0HA	1
22	PCB SWITCH BD	42-TD21S9-SWA	1
23	S/T SCREW B 3*10AB	63-B30100-AB4	2
24	CRT BRACKET	62-396500-0UN	2
25	LENS	56-R213LE-0HC01	1
26	S/T SCREW B 3*10AB	63-B30100-AB4	2
27	HOLDER POWER CORD	62-216340-0UA	1
28	CRT A51QDX992X002(H)	44-21RFLW-SZ1A	1
29	TOOTH WASHER 6*18*2	65-A60180-20E	
30	NUT M6.0*1.0	65-Z60100-50E	4
31	MAIN BD BRACKET	62-400060-1UN	4
32	P.C.B MAIN PCB BD	42-TD21S9-MAA	
33	DVD SCREEN COVER BOTTOM	67-400040-0G0	1
34	TERMINAL BD BRACKET	62-R213TB-0UN	1
35	S/T SCREW W 3*12AB	63-W30120-AB4	2
36	INLAY REAR AV	58-R213RI-2UI	1
37	S/T SCREW B 4*15AB	63-B40150-AB4	1
38	DVD FRONT DOOR	56-379690-0UA01	1
39	DVD SCREEN COVER UPPER	67-400030-0G0	1
40	M/C SCREW B 3*6	64-B30060-103	4
41	S/T SCREW B 3*12 AB	63-B30120-AB4	4
42	DVD MPEG PCB	40-00TD21-DEB	2
43	M/C SCREW B 3*6	64-B30060-103	2
44	REAR CABINET	55-R213RC-1UN01	1
45	S/T SCREW B 4*20 AB	63-B40200-AB4	6
46	S/T SCREW F 3*A0 BT	63-F30100-BT3	2

4.4 Service positions (DVD)

The following PWB's or modules are added for DVD (see also PWB location drawing, chapter 1):

1. DVD Interface panel.
2. DVD Module.

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

4.4.1 Accessing the DVD Interface panel(Decoder board)

1. UUN01nscrew the four fixation screws at position (1) shown as Figure 4-3, then separate the whole DVD module(DVD loader and Decoder board) from the TV chassis after you remove all cables connecting DVD module and the TV chassis?
2. Unscrew the four fixation screws at position (2) shown as Figure 4-4, then you can separate the Decoder board from the DVD module after you remove all cables connecting it, shown as Figure4-4.

4.4.2 Accessing the DVD loader

Remove the screws at position (3) shown as Figure 4-5, remove the top-cover of the DVD loader, then you can access the DVD loader after you remove all connection cables, shown as Figure 4-6.

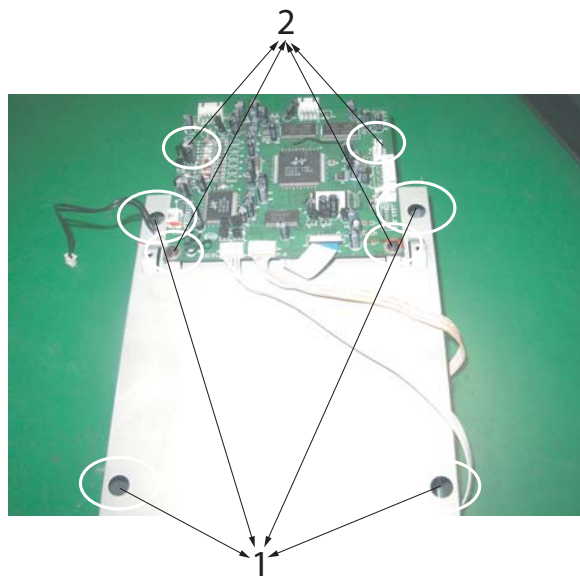


Figure 4-3 DVD Module

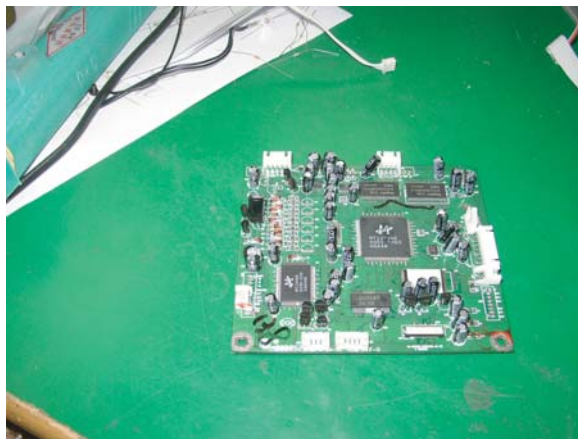


Figure 4-4 Decoder board



3

Figure 4-5 Access DVD loader



Figure 4-6

5. Service Mode, Error Codes and Fault Finding

5.1 Compair

5.1.1 Introduction

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (service remote control), which allows faster and more accurate diagnostics. Compair has three big advantages: .

- ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
- ComPair allows very detailed diagnostics (on I2C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I2C commands yourself because ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

5.1.2 Specifications

ComPair consists of a Windows based faultfinding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial or RS232 cable.

In case of the M133 chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector.

The ComPair faultfinding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in two ways:

- **Automatic** (by communication with the television): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I2C level. Compair can access the I2C bus of the television. ComPair can send and receive I2C commands to the micro controller of the television. In this way, it is possible for ComPair to communicate (read and write) to devices on the I2C busses of the TV-set.
- **Manually** (by asking questions to you): Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extent. When this is not the case, ComPair will guide you through the faultfinding tree by asking you questions (**example**: Does the screen give a picture? Click on the correct answer: YES / NO) and showing you examples (**example**: Measure P202 and click on the correct oscillogram you see on the oscilloscope). You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the faultfinding process.
- By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.
- Beside fault finding, ComPair provides some additional features like:
 - Up or downloading of presets.
 - Managing of preset lists.
 - If both ComPair and SearchMan (Electronic Service Manual) are installed, all the schematics and the PWBs of the set are available by clicking on the appropriate hyperlink.

5.1.3 How To Connect

First install the ComPair Browser software before connecting ComPair to the M133-DVD (see the Quick Reference Card for installation instructions). In the M133-DVD, you can only diagnose the TV. Always start the diagnosis by connecting the ComPair tool to the TV-set. **Connection to the TV-set.**

1. Connect the RS232 interface cable between a free serial (COM) port of your PC and the PC connector (marked with 'PC') of the ComPair interface.
2. Connect the mains adapter to the supply connector (marked with 'POWER 9V DC') on the ComPair interface.
3. Switch the ComPair interface "off".
4. Switch the television set "off" with the mains switch.
5. Connect the ComPair interface cable (3122 785 90004) between the connector on the rear side of the Compare interface (marked with 'I2C') and the ComPair connector P202 on the mono carrier.

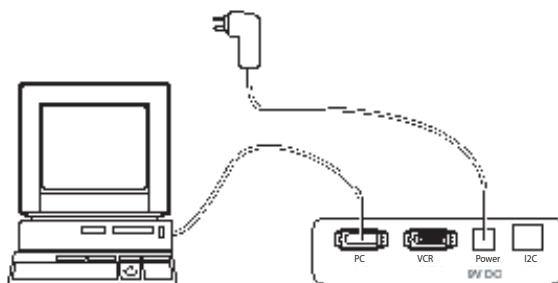


Figure 5-1 ComPair set-up

1. Plug the mains adapter in the mains outlet and switch "on" the interface. The green and red LEDs light up together. The red LED extinguishes after approx. 1 second while the green LED remains lit.
2. Start the ComPair program and read the 'introduction' chapter.

Connection to the DVD-module

Follow the instructions given on the screen for further diagnosis.

1. Use the ComPair DVD interface cable (3122 785 90017) to connect the DVD-module to the ComPair interface.

5.1.4 How To Order

ComPair order codes:

- Starter kit ComPair32/SearchMan32 software and ComPair interface (excl. transformer): 3122 785 90450.
- ComPair interface (excluding transformer): 4822 727 21631.
- Starter kit ComPair32 software (registration version): 3122 785 60040.
- Starter kit SearchMan32 software: 3122 785 60050.
- ComPair32 CD (update): 3122 785 60070.
- SearchMan32 CD (update): 3122 785 60080.
- ComPair interface cable for TV set: 3122 785 90004.

5.2 Error Codes

5.2.1 Error Buffer

The error code buffer contains all detected errors since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is written at the left side and all other errors shift one position to the right.

5.2.2 Error Codes

In case of non-intermittent faults, clear the error buffer before you begin the repair. These to ensure that old error codes are no longer present.

If possible, check the entire contents of the error buffer. In some situations an error code is only the result of another error code and not the actual cause (e.g., a fault in the protection detection circuitry can also lead to a protection).

Table 5-1 Error code overview

Error	Device	Error description	Check item	Diagram
0	Not applicable	No Error		
1	Not applicable	X-Ray Protection(USA)	C407,Q402	A2
2	-	-	-	-
3	STV9302	Vertical Protection	IC301,VlotAux.±14v	A2,A3
4	MSP3425G	MSP I2C identification error	IC1001,IC101	A5,A7
5	-	-	-	-
6	I2C bus	General I2C bus error	R027,R028,IC101	A5
7	-	-	-	-
8	-	-	-	-
9	M24C08	NVM I2C ident. error	IC001,RO24,R025,R026	A5
10	Tuner	Tuner I2C ident. error	TU101,IC103	A4
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-

5.3 TV Fault Finding

5.3.1 No picture, no sound, no raster, fuse blown

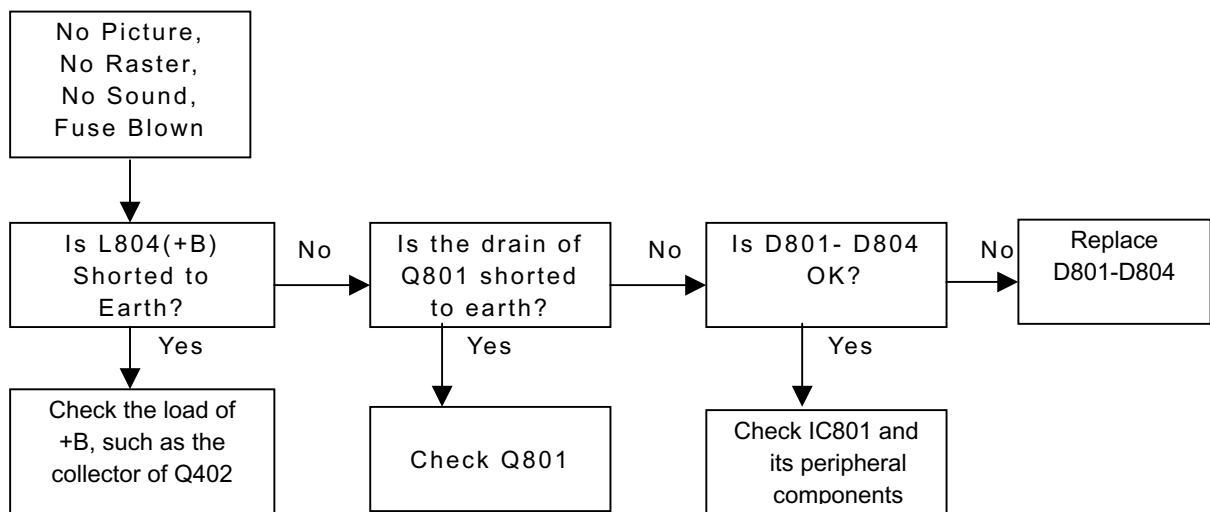


Figure 5-2 No picture, no sound, no raster, and fuse blown

5.3.2 No picture, No sound, No Raster, and abnormal +B Voltage

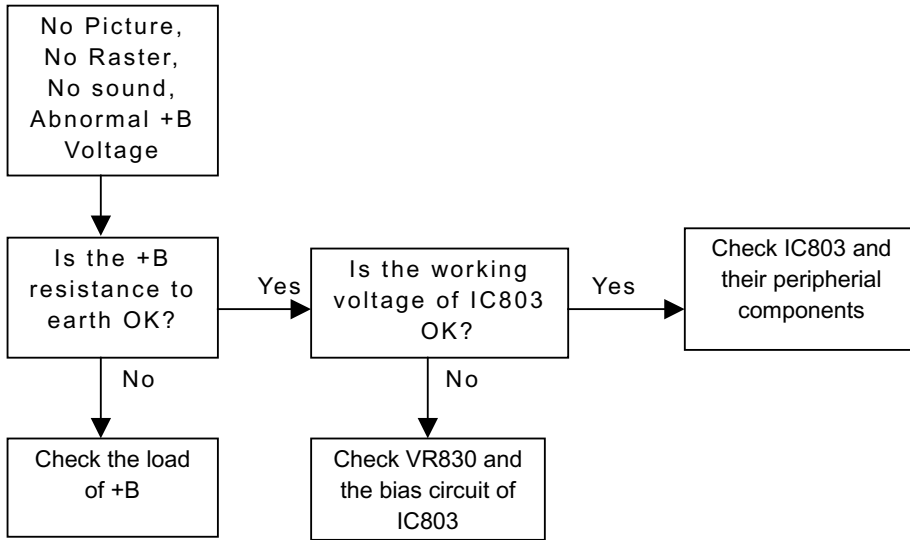


Figure 5-3 No picture, No sound, No Raster, and abnormal +B Voltage

5.3.3 No Picture, No Sound, No Raster, and +B OK

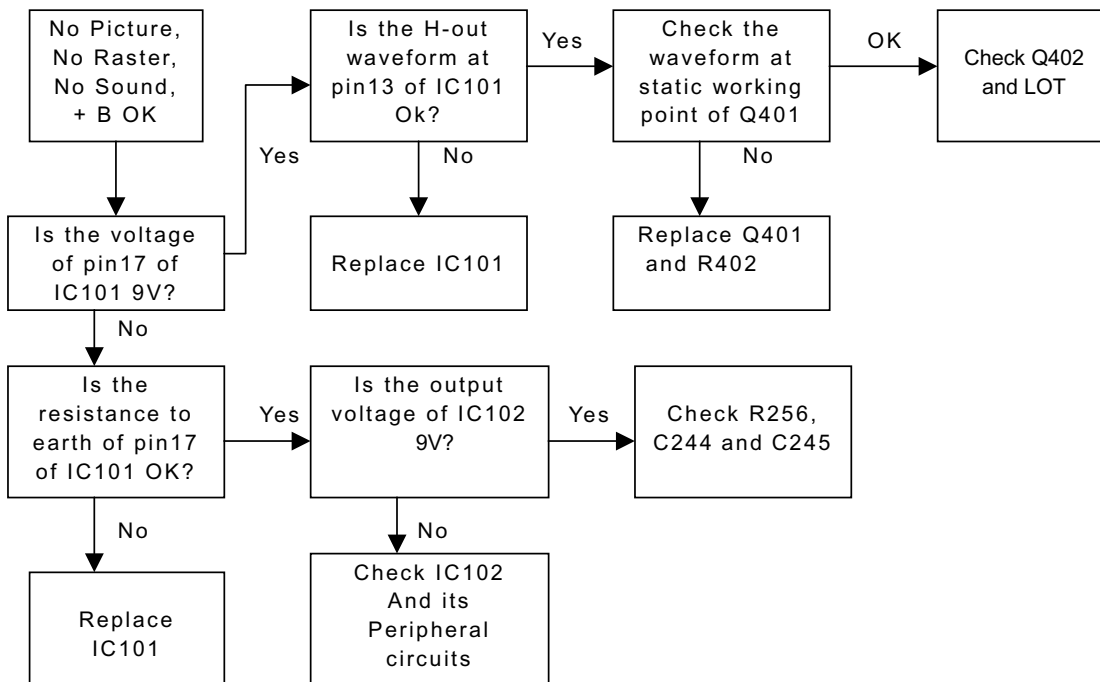


Figure 5-4 No Picture, No Sound, No Raster, and +B OK

5.3.4 No Picture, No Sound, Snow Dots

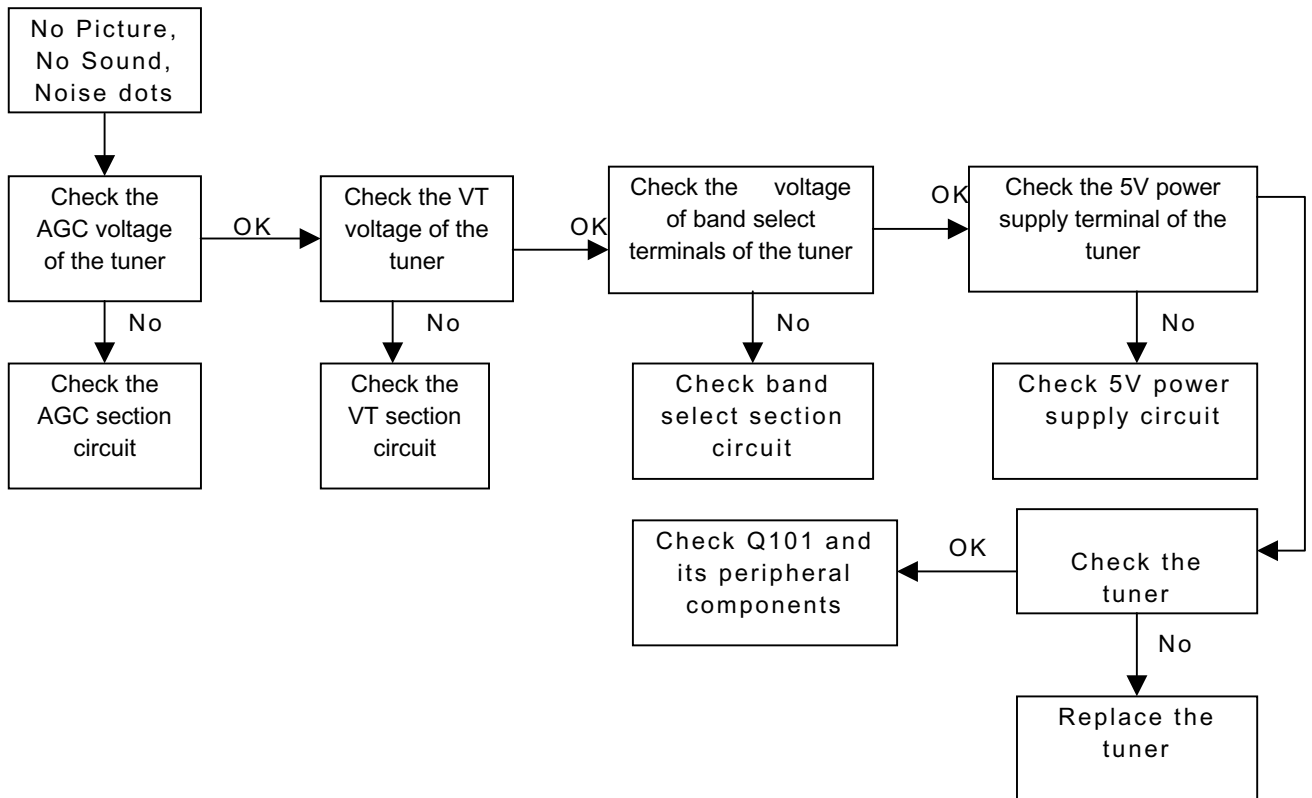


Figure 5-5 No Picture, No Sound, Snow Dots

5.3.5 No picture, Sound OK

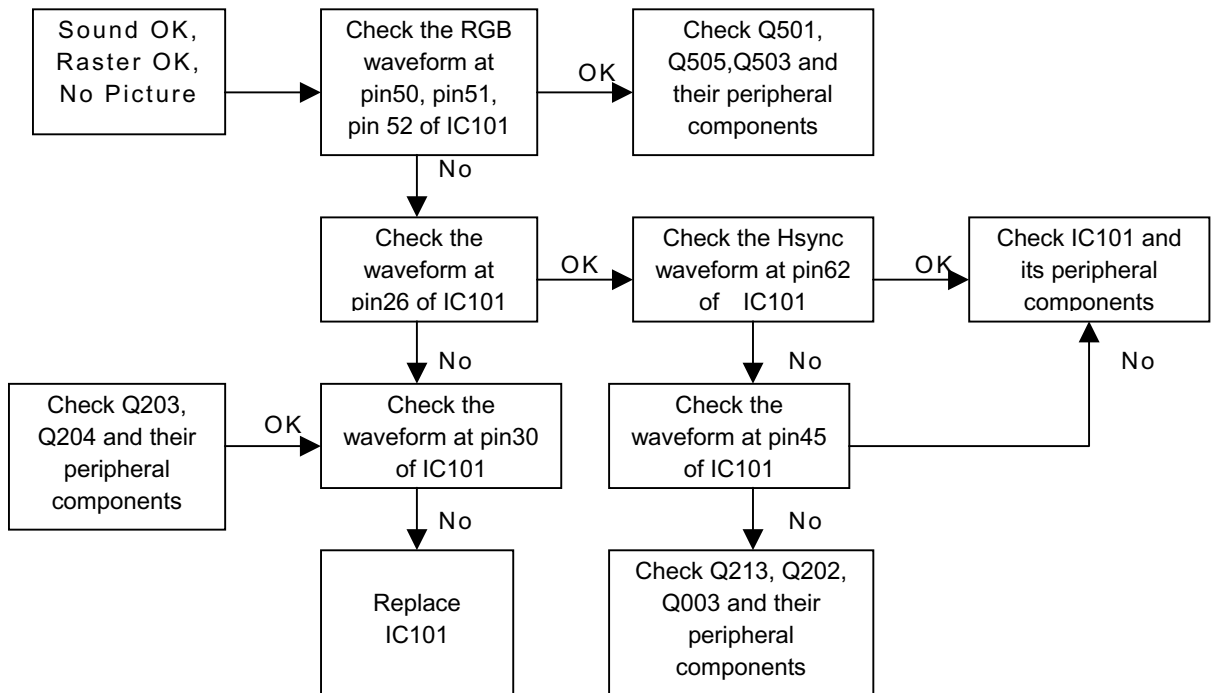


Figure 5-6 No picture, Sound OK

5.3.6 No Picture, No Raster, Sound OK

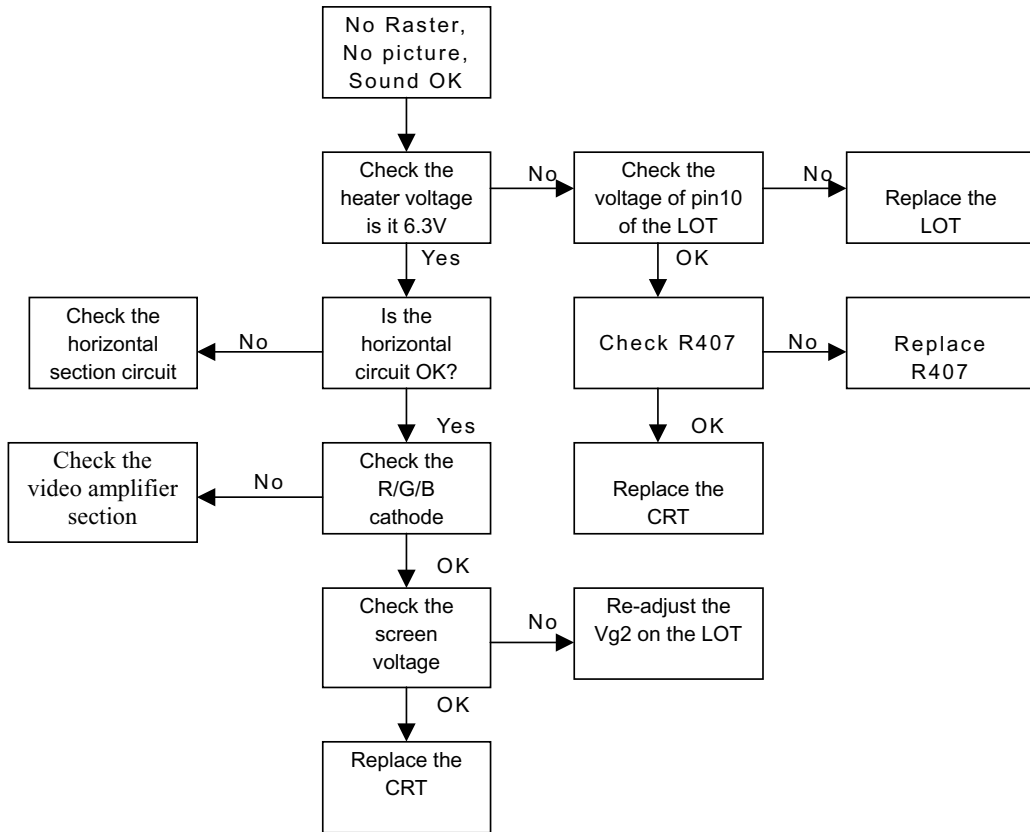


Figure 5-7 No Picture, No Raster, Sound OK

5.3.7 No Sound, Picture OK

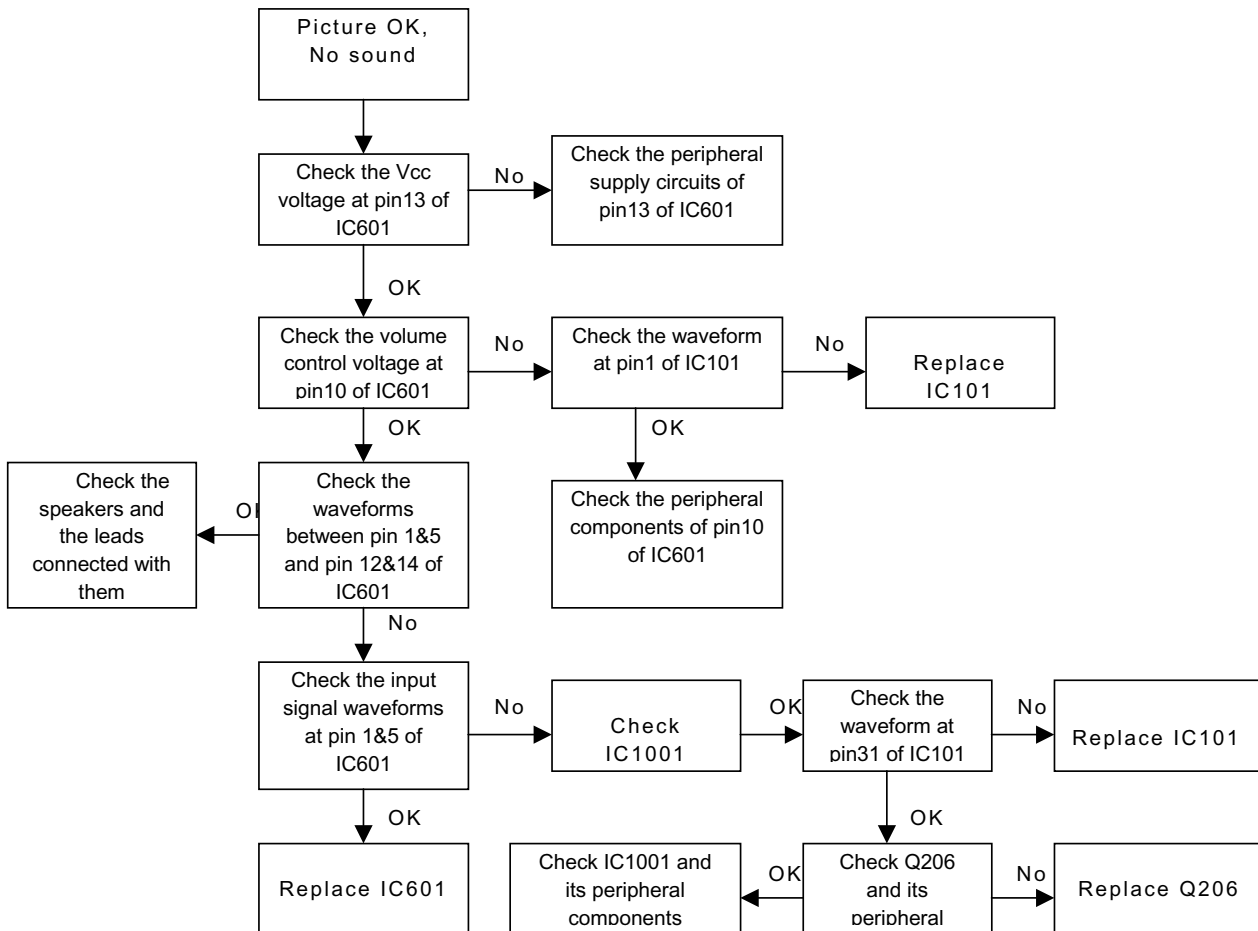


Figure 5-8 No Sound, Picture OK

5.3.8 No Tuning Control

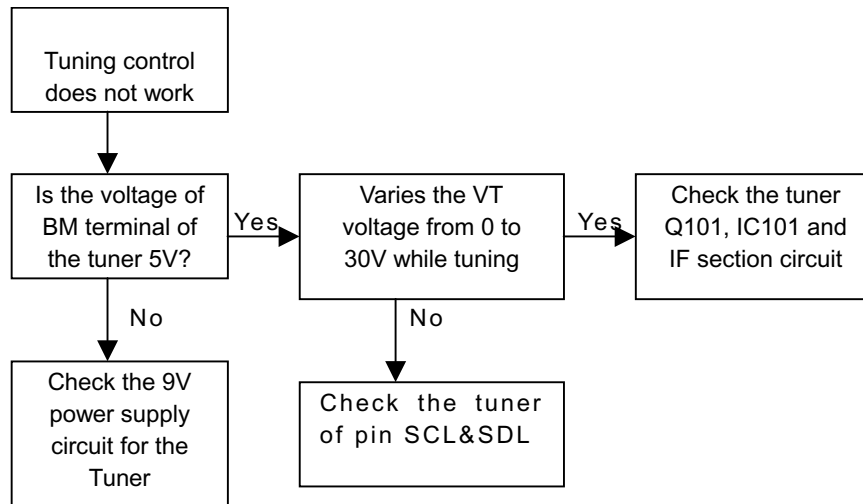


Figure 5-9 No Tuning Control

5.3.9 Unstorable channel

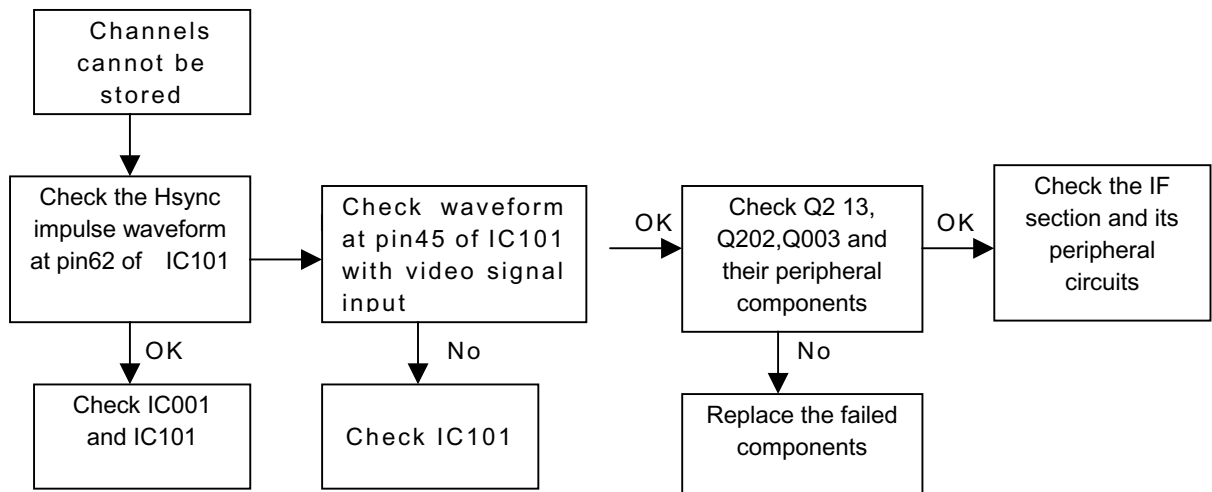


Figure 5-10 Unstorable channel

5.3.10 One Horizontal Line

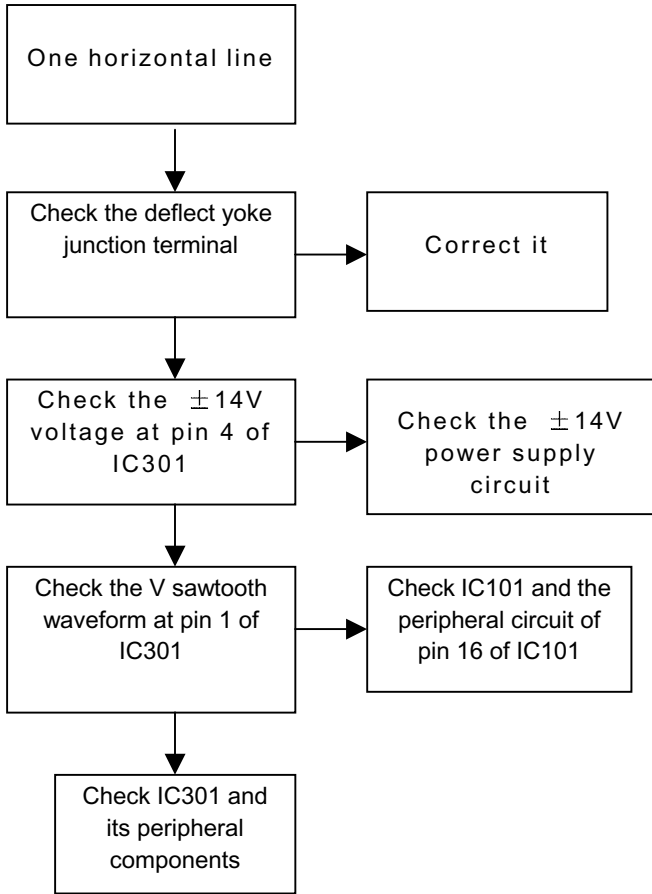


Figure 5-11 One Horizontal Line

5.3.11 No Color

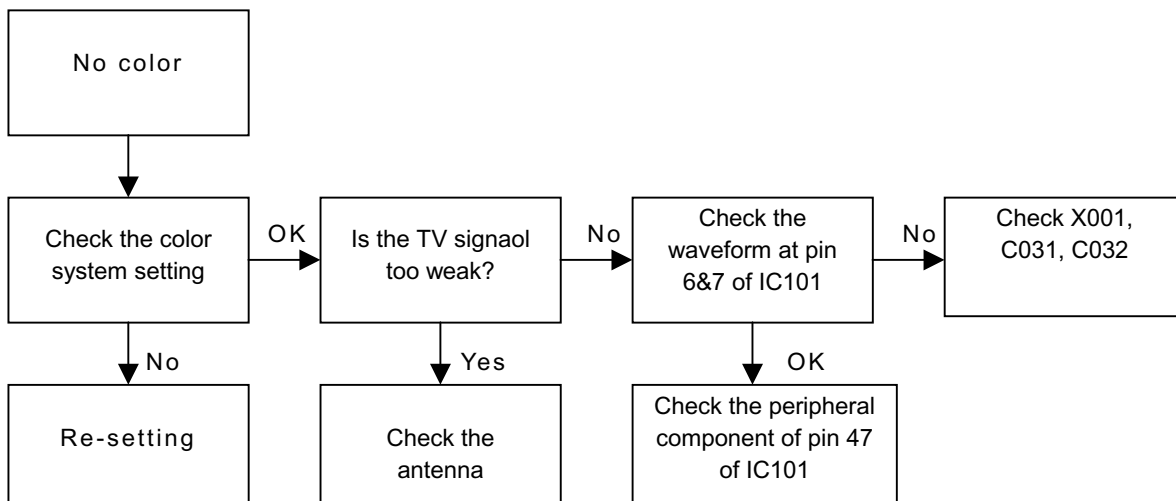


Figure 5-12 No Color

5.4 DVD Fault Finding

5.4.1 Repair positions

1. DVD Power supply of the pins of the socket S901 on the TV board. Refer to the TV power board maintenance section.
2. On the decoder board

2.1. Power supply: CN1

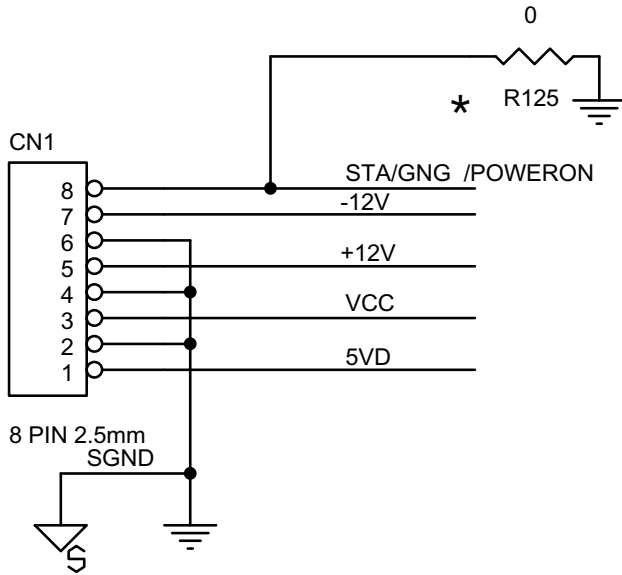


Figure 5-13 One Horizontal Line

2.3. Audio

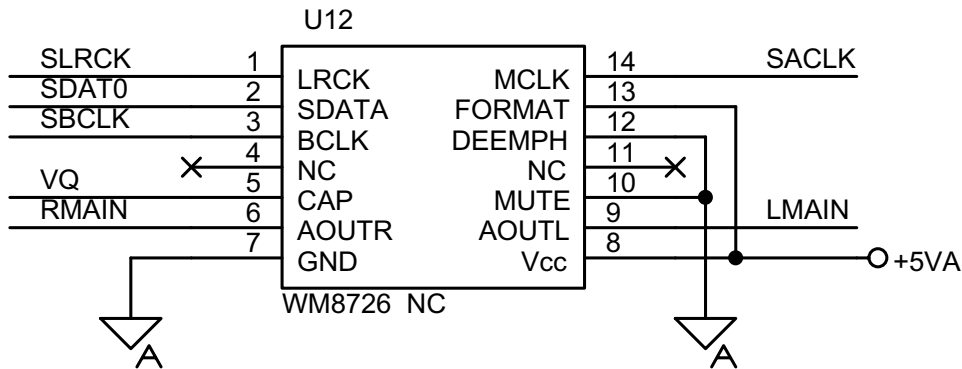


Figure 5-15 One Horizontal Line

Check if there is digital signal input on pin 1, 2, 3 and 14 and analog audio output on pin 6 and 9 of U12.

2.2. Crystal oscillator

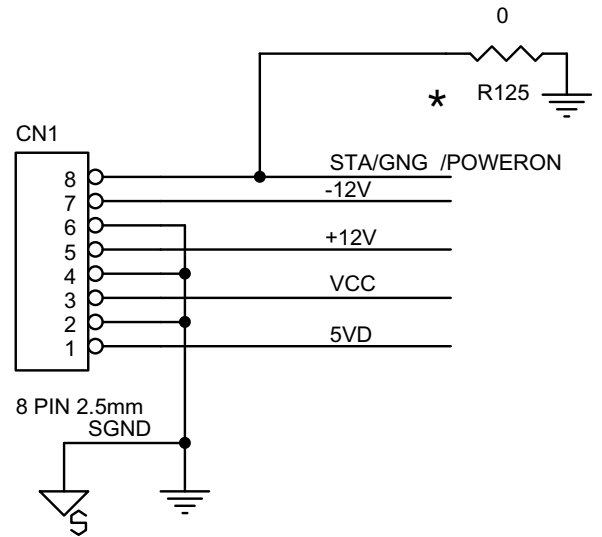


Figure 5-14 One Horizontal Line

Check whether there is 27Mhz clock signal on R41

2.4. DVD Video signal

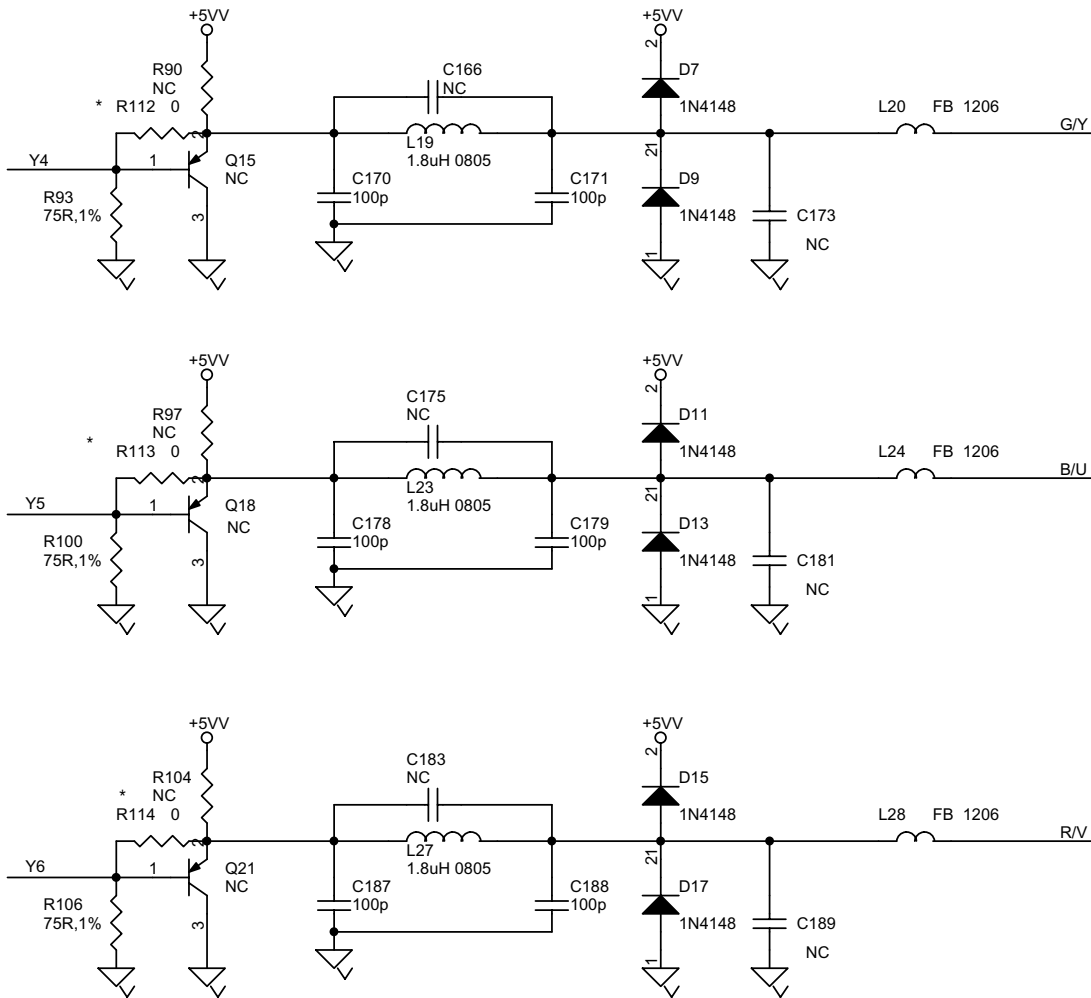


Figure 5-16 One Horizontal Line

There are 3 video signal circuits. This Y U V video output circuit is for your reference.

The Y U V signal of CN12A on the DVD MPEG board is to pinP914 on the TV board .

5.4.2 Repair instruction

1. Detailed repair instructions

1.1. Troubleshooting and service of the Power Supply Board S901 SCOKET (at DVD MODE)

1.1.1. Principle of Power Supply Operation

This appliance adopts a switched-mode power supply, which is assembled with the TDA16846 power switch module from Philips and is capable of protecting itself from over-current, over-voltage, over-heat and short-circuit. The circuit mainly stabilizes at +3.3v and fluctuates within a permissible range, such as 5VD, VCC, +12V and -12V. Please pay attention to the high voltage inside the white silkscreen with the mark "CAUTION" on the PCB while repairing. When using an oscilloscope to check the circuit, an isolated transformer must be connected.

1.1.2. Troubleshooting and Service

- 5VD(S901'1), VCC(S901'3) voltage varies out of the DVD power supply

- Please check whether the SWITCH IC IC901(PQ05RD21) is damaged. If IC901 is normal, check whether D835 are open or short. If they are not open or short, please check whether pin59 of IC101 has a high level. If it has a high level, check the switching power transformer (T803) for damage.

- **All the output voltages are 0V**
- Check whether then IC801 is eroded. If TV working normal, the DVD power supply
- 5VD, Vcc, +12V, -12V is not 0V.

- **+12V(S901'5) and 12V (S901'7) voltage are not normal, while other voltages are normal**
- Check whether D834 and D402 are open or short. If they are not open or short, the switching power transformer is damaged.

1.2. Troubleshooting and service of the Decoder and Servo Board

1.2.1. Troubleshooting and service of the pickup unit

- **Spindle motor does not move**
- Check the FFC connection between 24P of the CN2 and the loader.
- Check if +5V voltage is normal.
- Check if laser voltage (2V for VCD and 2.2V for DVD) exists on C pole of Q4 and Q5, if voltage on

pin 52 of U3 varies between 0 and 5V (5V for VCD and 0V for DVD), and if peripheral components are eroded or badly soldered.

- If the above are all normal but there is no laser emission, then change the loader.
- If no voltage variance on pin 52 of U3, then change U3.
- If the pickup unit does not emit laser or focus, the spindle motor will not move. For the non-focus defect, check if there is signal sent from pin 12 and pin 13 of U5 to pin 1 and pin 26 of U4, and if there are F+, F-, T+ and T- signals output from U4.
- **Disc cannot be read.**
- Check the FFC connection between 24P of the CN2 and the loader.
- Check if laser voltage (2V for VCD and 2.2V for DVD) exists on C pole of Q4 and Q5 and if they are normal, if voltage on pin 52 of U3 varies between 0 and 5V (5V for VCD and 0V for DVD), and if peripheral components are eroded or badly soldered.
- Check if U3, U4, U5 and peripheral components are eroded or badly soldered.
- Check if there is pin 8 of CN2 has RFO signal. The normal RFO signal is a clear reticulated wave. If not, check if bad solder exist on U3 and peripheral components; if yes, then check the connection between U4 and U3.
- If all the above are normal, then change U3 or the loader.
- **Only DVD disc, or only disc except DVD can be recognized.**
- Check the FFC connection between 24P of the CN2 and the loader.
- Check if laser voltage 2V output on C pole of Q4, if pin 125 of U3 is at low level.
- Check if pin 1 to pin 38 of U3 and the peripheral components are badly soldered, defected and eroded.
- Check if voltage variance exists on pin 52 of U3.
- If all the above are normal, then change U3 or the loader.

1.2.2. Troubleshooting and service of the decoder unit

- **No video, no audio and buttons do not work.**
- Check the all the power supplies to the decoder board.
- Check if the reset circuit consisting of C5, R1 and D2 is normal (at a high level for tens of milliseconds, then constantly at 0V). If the circuit is at low level constantly, then C5, D2 and R1 are eroded.
- Check the 27MHz signal output, if there is no signal output, then crystal oscillator Y1 and peripheral components are defected or eroded.
- Check if R59 can output 93MHz signal, if not, then check if short-circuit, bad solder or foreign object exist on Audio DAC circuit U12, SDRAM, U8 and U7.
- If the reset level is normal, then check the chip-selection signal on Pin 26 of U10 and its address and data signals.
- Check if short-circuit and bad solder exist on Pin Y1 and Y6 of U5 to the subsequent filter circuit.
- If the peripheral components of U5 are all normal, there is no short-circuit, bad solder and bad connection on the PCB, then change the major chip U5.

1.2.3. Troubleshooting and service of the video unit

- **No video picture, normal sound**
- Check if the Y1 to Y6 signals on Pin 164 to Pin 173 of U5 are normal and if short-circuit and bad solder exist on the filter network where they are connected to.
- **Abnormal color of video picture**
- Check if the 27MHz output signal is normal.
- Check if the 3.3V and 2.5V of the U1 and D1 power supply voltages on the decoder board are normal, and if the ripple factor is too high.
- Check if the video filter network circuit is normal.
- If all the above are normal, then change U5, U8 or U7.

1.2.4. Troubleshooting and service of the audio unit

1. No sound

- Firstly, check if the power supply voltages +12V and -12V to the operation amplifying IC U13 are normal.
- Check if the B poles of muting transistors Q12 and Q13 are at 0.7V. If yes, then check the relevant muting circuit.
- Check whether bad solder exists on Pin 1, 2, 3 and 14 of U12 on the decoder board and whether the signal is abnormal. Disconnect RN2 and check if the clock signal ACLK, ABCK and ALRCK output by U5 are normal. If yes, then change U12.

• Distorted audio and loud noise

- Firstly, check if the power supply voltages +12V and -12V to the operation amplifying IC U13 are normal.
- Check if the muting transistor Q12 and Q13 are normal.
- Check if the muting transistor Q10 and Q11 are normal. If they are abnormal, Q12 and Q13 may be half-saturated.
- Check whether bad solder exists on Pin 1, 2, 3 and 14 of U12 on the decoder board and whether the signal is abnormal. Disconnect RN2 and check if the clock signal ACLK, ABCK and ALRCK output by U5 are normal. If yes, then change U12.

• Loud noise when power on and off

- Check if the MUTE signal line to the resistor R81 and R87 on the base electrode of the muting transistor Q12 and Q13 on the decoder board is broken, and if Q12 and Q13 are eroded.
- Check if muting transistors Q11 and Q12 and the peripheral components are defected.
- Remote reception is insensitive or fails.
- Check if the power supply voltage to the remote sensor is normal.
- Check if the remote control works properly.
- Use an oscillograph to check if there is output waveform from the first pin IR of the remote sensor after each pressing of buttons on the remote control. If the remote control works correctly but remote sensor does not output, then the remote sensor should be changed.

1.2.5. Remote reception is insensitive or fails.

- Check if the power supply voltage to the remote sensor is normal.
- Check if the remote control works properly.
- Use an oscillograph to check if there is output waveform from the first pin IR of the remote sensor after each pressing of buttons on the remote control. If the remote control works correctly but remote sensor does not output, then the remote sensor should be changed.

5.4.3 Repair flow charts

1. The power can not be on or off

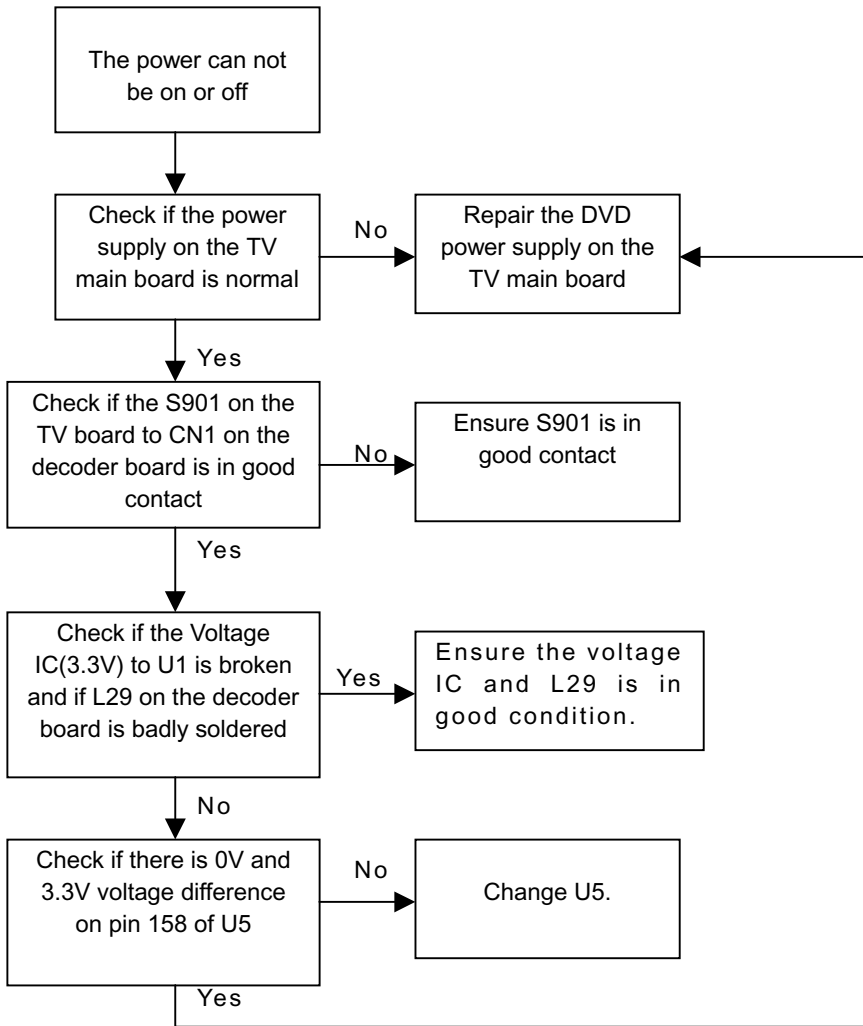


Figure 5-17 The power can not be on or off

2. No video picture, no sound (DVD)

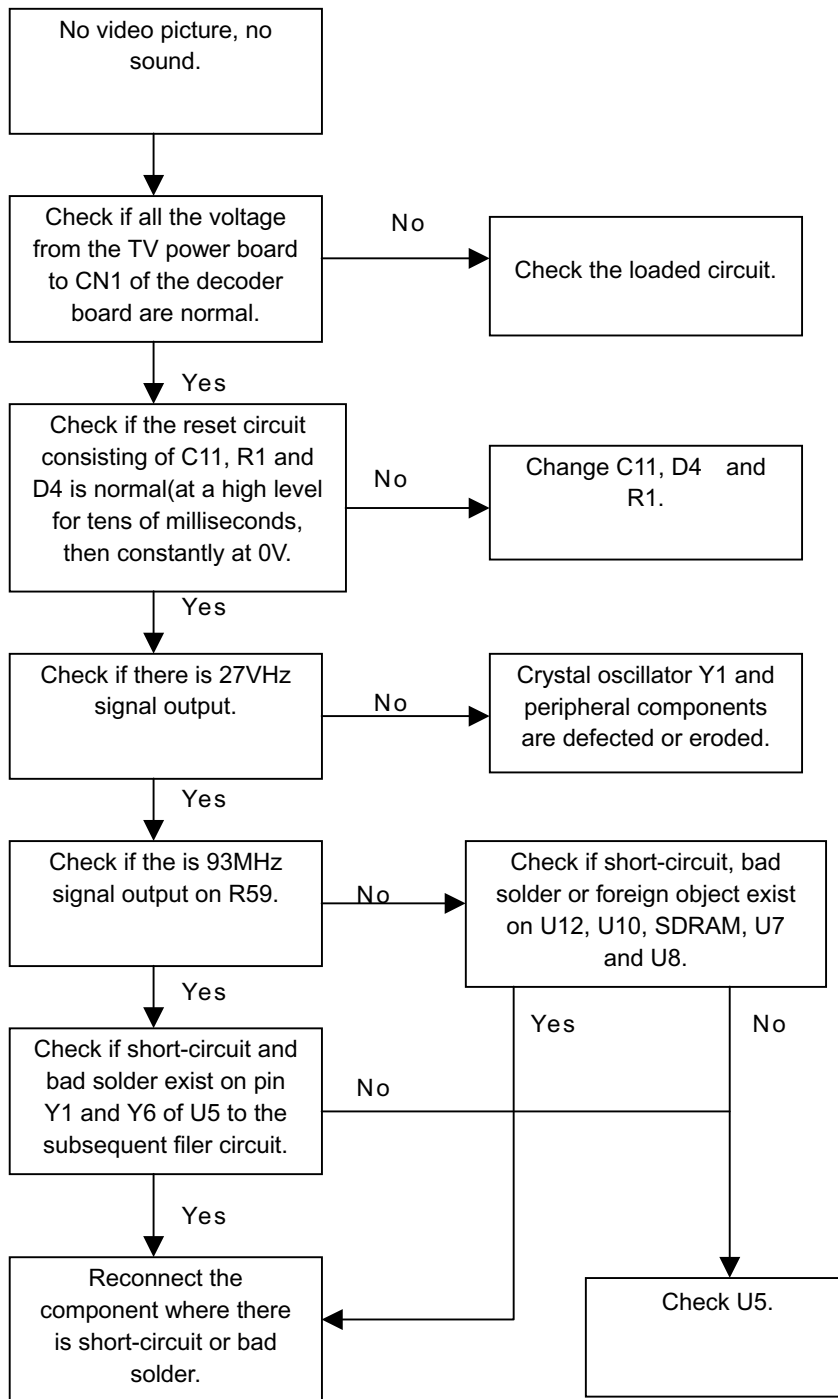


Figure 5-18 No video picture, no sound (DVD)

3. All output voltage of S901 on the TV main board is 0V or deviated

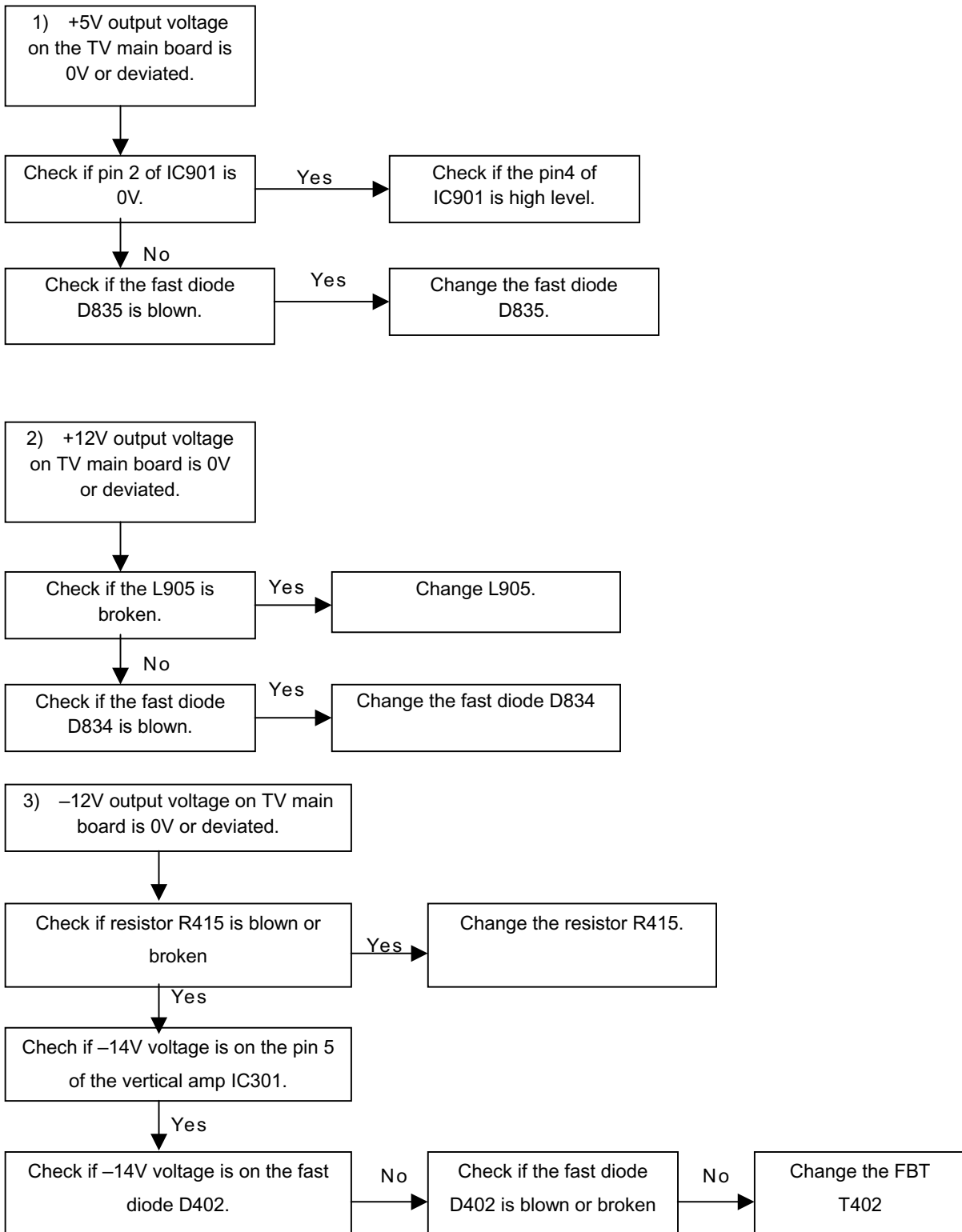
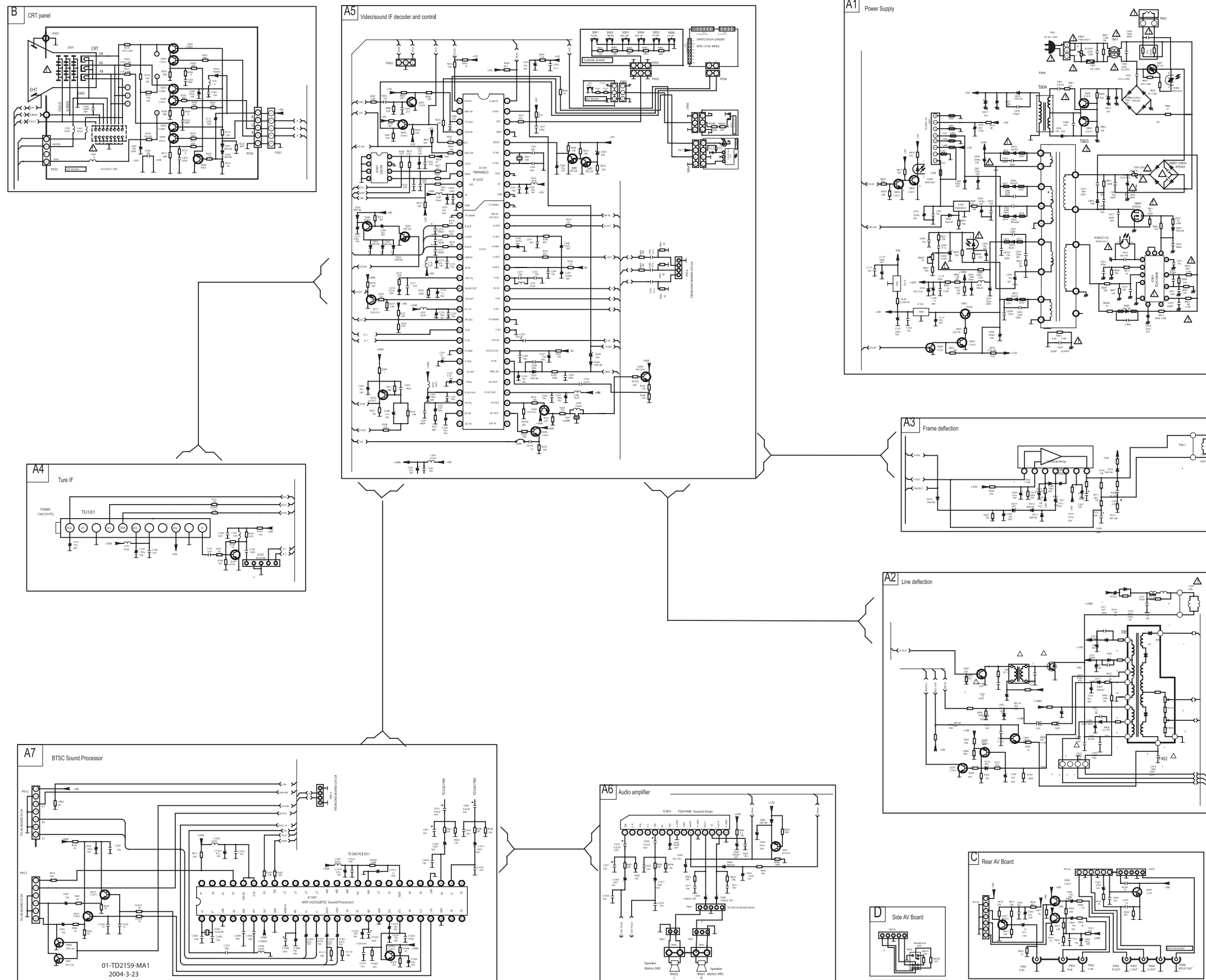


Figure 5-19 All output voltage of S901 on the TV main board is 0V or deviated

6. Block Diagrams, Waveforms, Wiring Diagram.

Block Diagram

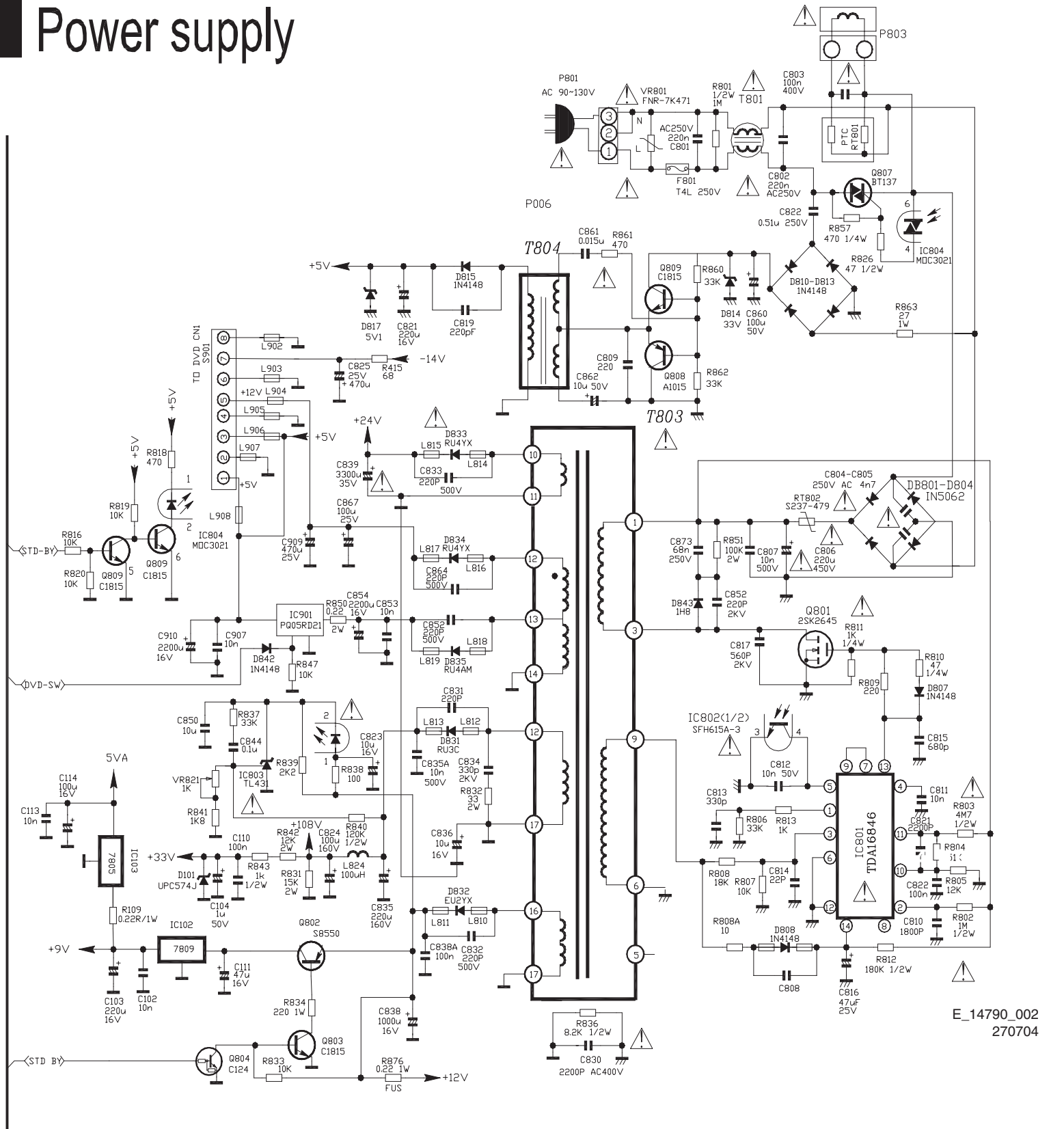


7. Electrical Diagrams and Print-Layouts

TV Main Carrier: Power Supply

A1

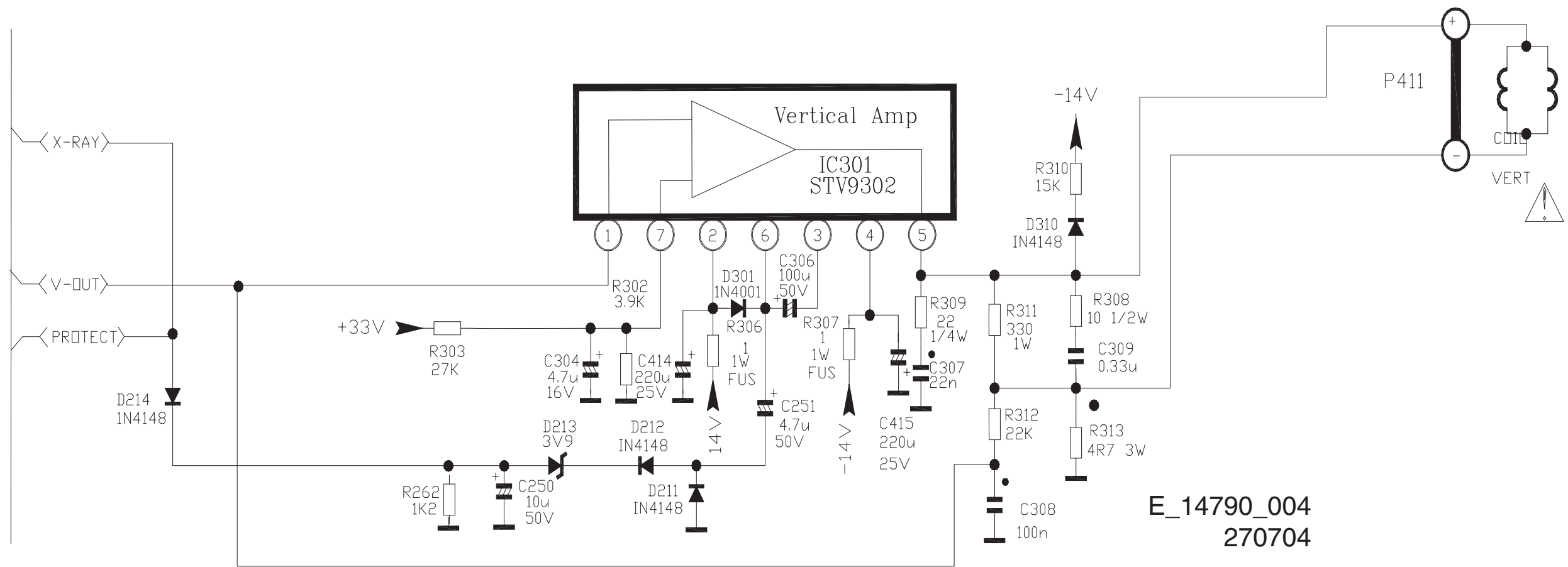
Power supply



E_14790_002
270704

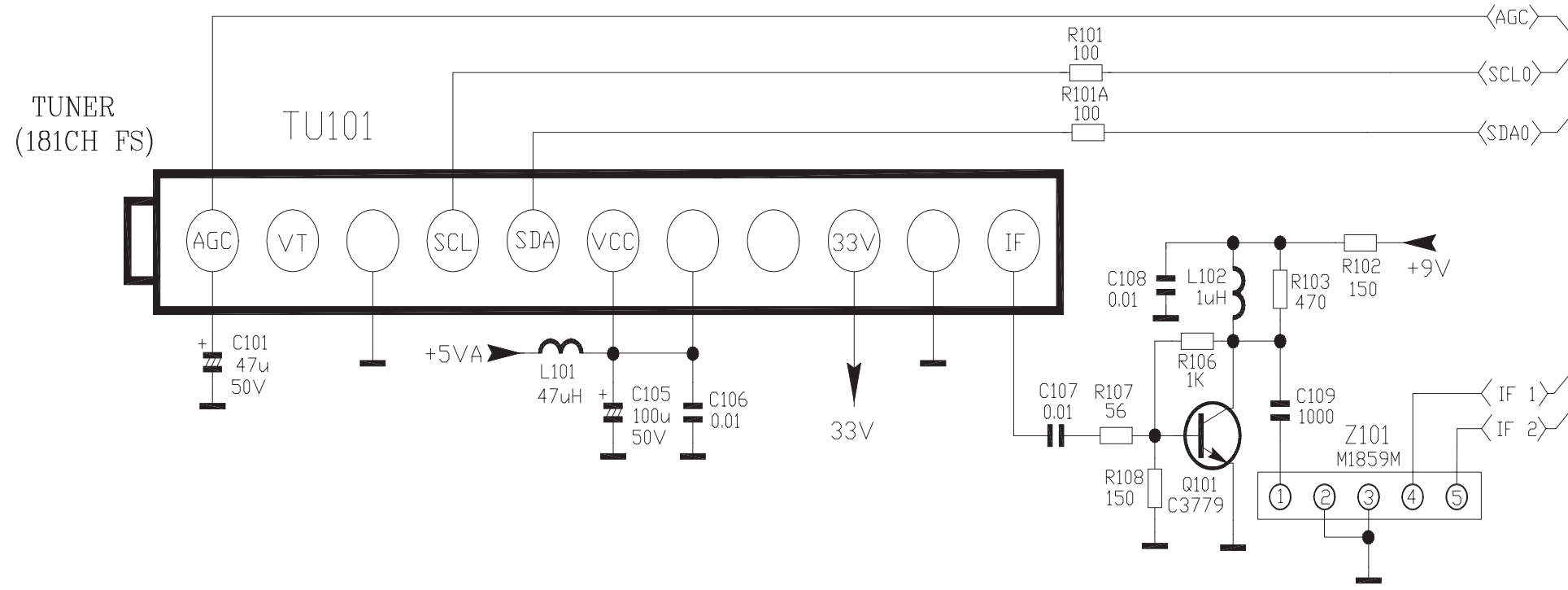
TV Main Carrier: Frame Deflection

A3 Frame deflection



TV Main Carrier: Ture IF

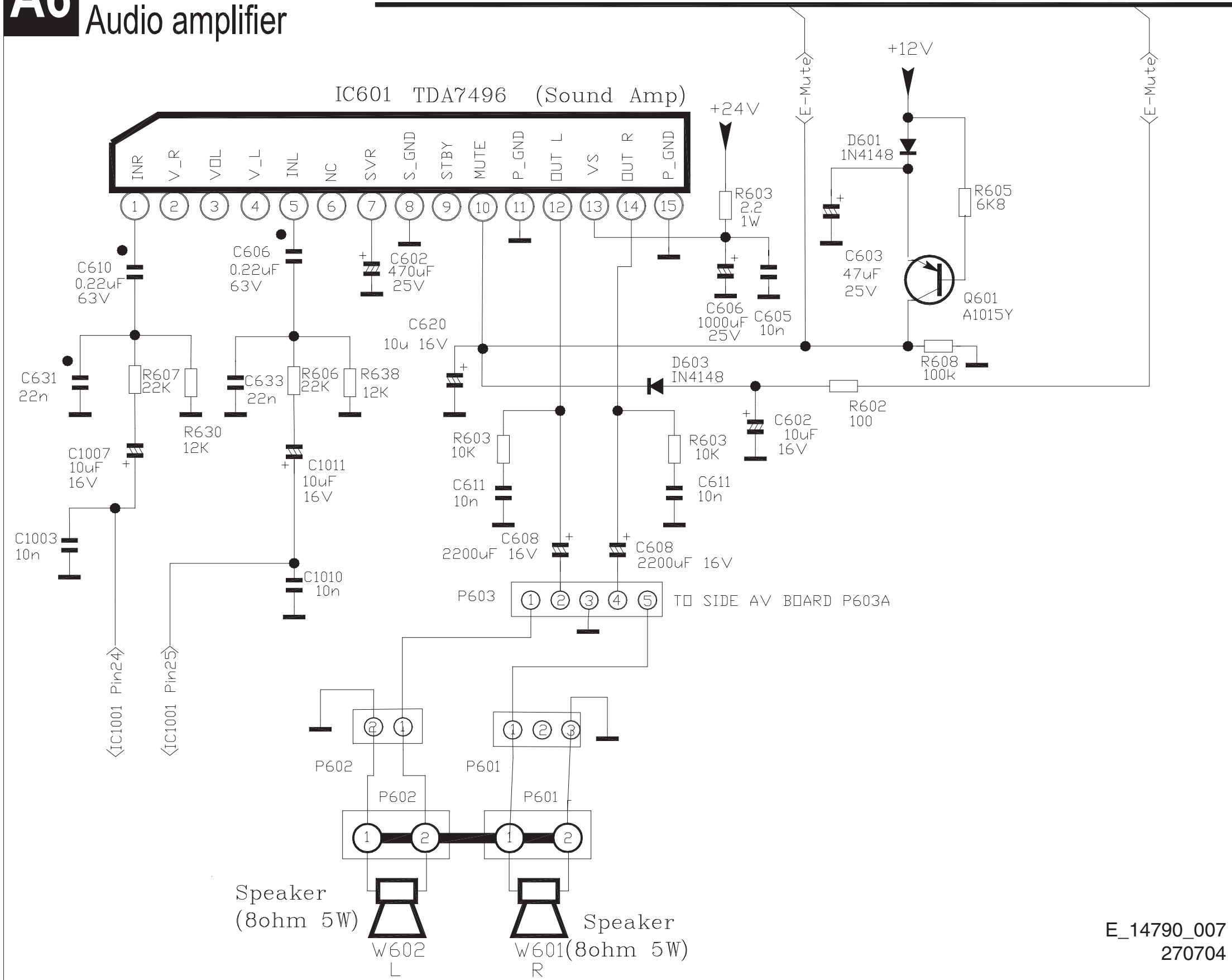
A4 Ture IF



E_14790_005
270704

TV Main Carrier: Audio amplifier

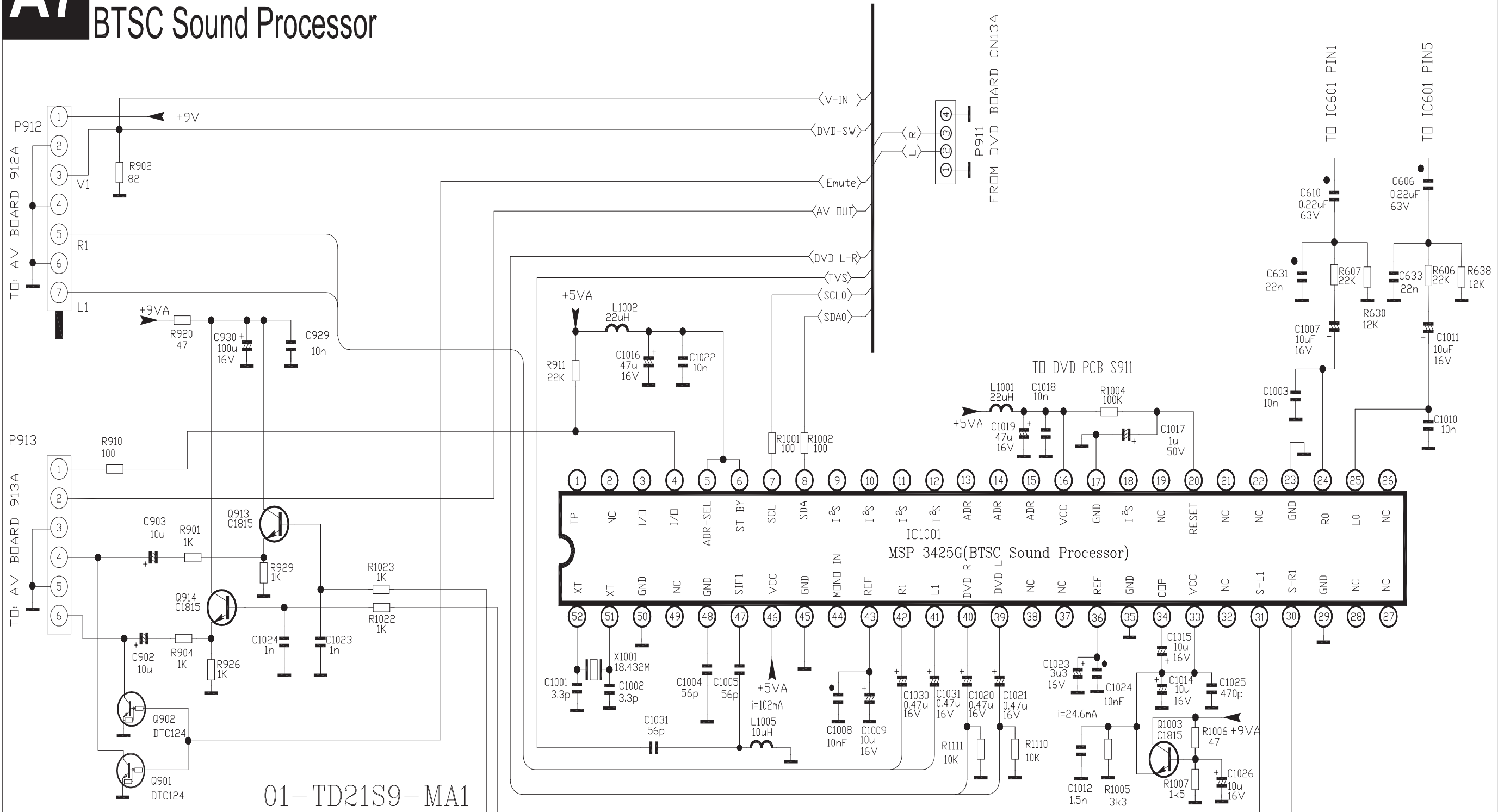
A6 Audio amplifier



E_14790_007
270704

TV Main Carrier: BTSC Sound Processor

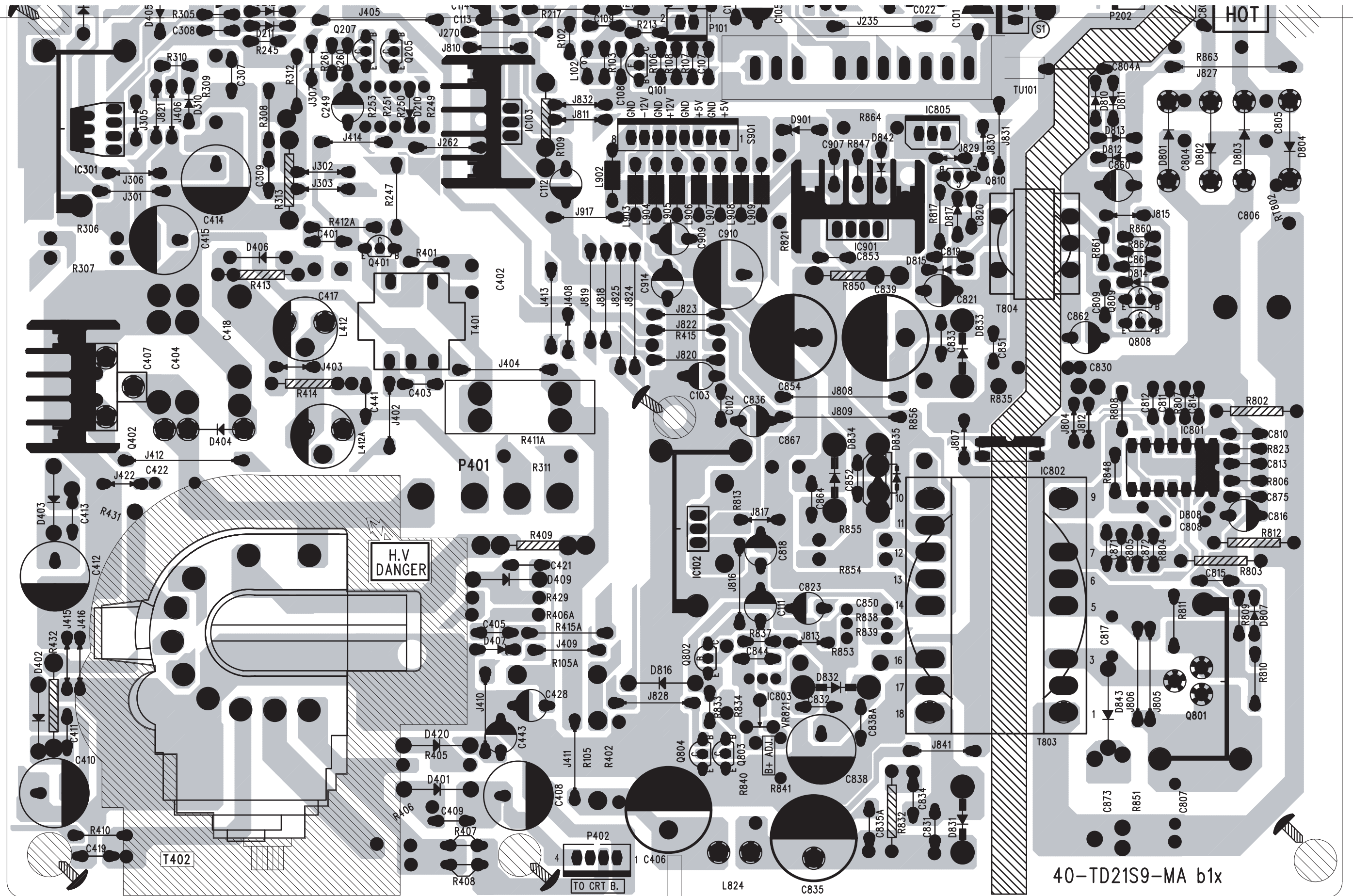
A7 BTSC Sound Processor



01-TD21S9-MA1
2004-3-23

E_14790_008
270704

Layout TV Main Carrier: Part 2



40-TD21S9-MA b1x

8. Alignments

8.1 Summarization

This chassis face with South and North America N system market "Super Single Chassis" which applied "Toshiba Combo" IC TMPA8823 that based on Toshiba corporation MCU and entirely small signal disposing, while the software designed and exploited by PHILIPS design center.

Any participant to adjust this set should be familiar with the alignment procedure instruction and the set function feature in order to dispose questions appear in producing process. Different from other chassis, it face with N system market, so added BTSC/SAP, CCD and V-CHIP function. Please pay special attention about these functions when aligning or inspecting

Two operation modes: User mode and factory mode, the user mode set for user which could be operated by remote control or key board on the top panel while the factory mode set for producing alignment or service guiding which could only be operated by remote control

Methods for entering into factory mode:

1. In TV mode, press the "PLAY/PAUSE" button of the remote control to enter into factory mode.
2. Press "1,2,3,4,5,6,7,8,9,0,SCAN_DOWN,SCAN_UP,SKIP_DOWN,SKIP_UP,SLOW_DOWN,SLOW_UP,R/L,SEARCH,LANGUAGE,ANGLE,SUBTITLE,ZOOM,REPEAT" keys on the remote control to switch in aligning menu "FAC01~FAC23" in sequence ;Another method, Press "ENTER" button firstly and then press "CH+ ▲,CH- ▼" to switch in different menu fastly.
3. Press "CH+▲,CH-▼" to select any parameter item you want.While press "◀" "▶" to change parameter value.
4. Press "PLAY/PAUSE" button again or press "MENU" button of the remote control to quit and then the changed factory parameter will be remembered automatically.

8.2 SPECIAL MODES

8.2.1 Aging mode

Used for aging before adjusting the set. Set the Bit6 of OPTM2 in D-mode as 1 when pre-setting EEPROM. Then the aging mode and the easy button "PLAY/PAUSE" of the remote control are in effect . When over the aligning and the factory mode is ok ,the two items turn off automatically. Now the Bit6 set as 0 automatically.

8.2.2 Vertical stop-vibration mode

Used for confirming the speedup pole-voltage. In factory mode, press "TV/AV/DVD" button of the remote control to enter into vertical stop-vibration mode .Then press once more to quit

8.2.3 White balance mode

Used for white balance auto- aligning. In factory mode, Press the "REPEAT A-B" button of the remote control to enter into white balance mode

8.2.4 Factory OK mode

Used for initializing the user menu before sending out of factory. Please sure there is no other operation after this.In factory mode ,Press "MTS" button of the remote control to enter,and then the screen will display WAIT.After finishing initializing, it will display OK and quit automatically.If press the "PLAY/PAUSE" button again, it can not enter into factory mode. If you want to enter again,please follow this:.,press the "volume" button on the front panel to decrease the volume till zero ,and simultaneously press the "0"button of the remote control three

time continuously within 15 seconds .Then will enter into factory mode.

8.3 ALIGNMENT PROCEDURE

8.3.1 FLOWCHART OF ALIGNMENT PROCEDURE

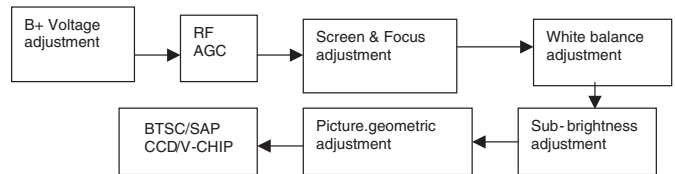


Figure 8-1

8.3.2 Adjustment of B+ voltage

1. Apply 120VAC($\pm 5V$) to mains power input, and Philips standard testing pattern to RF input.
2. Adjust VR821 in STANDARD mode until voltage at C406+(B+) is $112V \pm 0.5V$.

8.3.3 RF AGC adjustment

Observe monitor the collector waveform of Q101 with the probe of Oscilloscope as Figure 8-1. Select channel 2 (>70dB) from the antenna input. Enter D-mode, select menu 9 to adjust RFAGC item until the monitor peak value to $0.8V_{p-p}$.

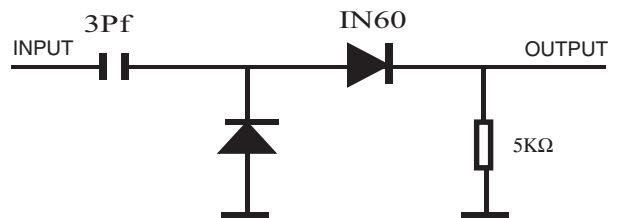


Figure 8-2

8.3.4 Screen & Focus voltage adjustment

1. Apply pattern signal in normal status, enter D-mode, press "TV/AV/DVD" button to turn off the vertical output.
2. Adjust the SCRREEN switch on the flyback transformer to make a horizontal shining line just visible on the screen. (Note: RC/GC/BC setting value is 80, GD/BD setting value is 40)
3. Press the "TV/AV/DVD" button again to turn on the vertical output, adjust the "FOCUS" on the flyback transformer to obtain the optimum focus.

8.3.5 White balance adjustment

1. Apply the black and white pattern in normal status;
2. Alignment of normal color temperature
 - Change Color Temperature to normal status, Press "1" of the remote control to enter menu 1 .
 - Use a color analyzer to measure the black side of the screen. By changing the value of RCUT,GCUT and BCUT, set the reading of the color analyzer to $X=285\pm 12$, $Y=295\pm 12$.
 - Use a color analyzer to measure the white side of the screen. By changing the value of BDRV?GDRV, set the reading of the color analyzer to $X=285\pm 12$, $Y=295\pm 12$.

- Separately set the brightness and contrast from min. to max., repeat the step 2 and 3 until the reading of the color analyzer is correct.
- 3. Alignment of warm color temperature
 - Change Color Temperature to warm status, Press "2" of the remote control to enter menu 2.
 - Use a color analyzer to measure the black side of the screen. By changing the value of RCUT -W, GCUT -W and BCUT -W, set the reading of the color analyzer to $X=313\pm 12$, $Y=323\pm 12$.
 - Use a color analyzer to measure the white side of the screen. By changing the value of BDRV -W, GDRV -W set the reading of the color analyzer to $X=313\pm 12$, $Y=323\pm 12$.
 - Separately set the brightness and contrast from min. to max., repeat the step 2 and 3 until the reading of the color analyzer is correct.
- 4. Alignment of cold color temperature
 - Change Color Temperature to cold status, Press "3" of the remote control to enter menu 3 .
 - Use a color analyzer to measure the black side of the screen. By changing the value of RCUT -C, GCUT -C and BCUT -C, set the reading of the color analyzer to $X=270\pm 12$, $Y=275\pm 12$.
 - Use a color analyzer to measure the white side of the screen. By changing the value of BDRV -C, GDRV -C, set the reading of the color analyzer to $X=270\pm 12$, $Y=275\pm 12$.
 - Separately set the brightness and contrast from min. to max., repeat the step 2 and 3 until the reading of the color analyzer is correct

Note: Provided the production line is equipped with the self-White balance adjusting equipment, white balance of M133 chassis can be adjusted automatically as following: Press "REPEAT A-B" button under factory mode, the TV set will adjust automatically.

8.3.6 Adjustment of Sub-brightness

1. Apply the Grey-scale/Color bar (NTSC signal) to the AV input, in normal status.
2. Select BRTC to adjust the sub-brightness, until that the 2nd dark bar of 8 level Grey scale just can be seen.

Table 8-1 Remote key: "1"

Factory menu 1			
Item	Remark	Max value	Default
RC	R cut-off setting (for normal color temperature)	FFH	80H
GC	G cut-off setting (for normal color temperature)	FFH	80H
BC	B cut-off setting (for normal color temperature)	FFH	80H
GD	G drive setting (for normal color temperature)	7FH	40H
BD	B drive setting (for normal color temperature)	7FH	40H

Table 8-2 Remote key: "1"

Factory menu 2			
Item	Remark	Max value	Default
RC-C	R cut-off setting (for cool color temperature)	FFH	80H
GC-C	G cut-off setting (for cool color temperature)	FFH	80H
BC-C	B cut-off setting (for cool color temperature)	FFH	80H
GD-C	G drive setting (for cool color temperature)	7FH	40H
BD-C	B drive setting (for cool color temperature)	7FH	40H

Table 8-3 Remote key: "1"

Factory menu 3			
Item	Remark	Max value	Default
RC-W	R cut-off setting (for warm color temperature)	FFH	80H
GC-W	G cut-off setting (for warm color temperature)	FFH	80H
BC-W	B cut-off setting (for warm color temperature)	FFH	80H

Note: If customers have special technics requirement about item 5 and 6 ,Please follow customer's adjustment standard.

8.3.7 Picture geometric distortion adjustment

Apply Philips standard testing pattern

Menu 4

HPOS5/6(horizontal center) HIGH5/6(vertical amplitude)
 VP50/60(vertical center)V LIN5/6(vertical linearity)
 VSC5/6(V-S Correction)
 HPOS5/5(horizontal center) HIGH5/5(vertical amplitude)
 VP50/60(vertical center)V LIN5/5(vertical linearity)
 VSC5/5(V-S Correction)

8.3.8 BTSC/SAP Checking

BTSC/SAP function is used to check whether the demodulation function is normal and not need to adjust.

8.3.9 CCD and V-CHIP Checking

V-CHIP function checking please refer to the operation manual. CCD function checking see the following detailed checking methods.

8.3.10 Initialization

Press "MTS" button of the remote control under factory mode to initialize, the screen will display "WAIT" until "OK" appears which means the initialization is finished. After initialization, the set will quit factory mode automatically.

8.4 FACTORY MODE SETTING

D-mode:

Enter D-Mode by pressing "PLAY/PAUSE" key, and then you can enter the factory mode. Factory items are grouped into sixteen different menus. The following tables list the groupings of the factory items:

Factory menu 3			
GD-W	G drive setting (for warm color temperature)	7FH	40H
BD-W	B drive setting (for warm color temperature)	7FH	40H

Table 8-4 Remote key: "4"

Factory menu 4 (for 50Hz source)			
Item	Remark	Max value	Default
HIGH5	Height (50Hz)	3FH	00H
VP50	Vertical position (50Hz)	07H	02H
VLIN5	Vertical linearity (50Hz)	0FH	0BH
VSC5	Vertical S correction (50Hz)	0FH	07H
VBLK5	Vertical blanking start & stop [1C, bit 3 ~ 0]	0FH	00H
VCEN5	Vertical center (50Hz & 60Hz)	3FH	1BH
HPOS5	Horizontal position (50Hz)	1FH	0EH

Table 8-5 Remote key: "4"

Factory menu 4 (for 60Hz source)			
Item	Remark **	Max value	Default
HIGH6	Height (60Hz)	3FH	00H
VP60	Vertical position (60Hz)	07H	00H
VLIN6	Vertical Linearity (60Hz)	0FH	08H
VSC6	Vertical S correction(60Hz)	0FH	07H
VBLK6	Vertical blanking start & stop [1CH, bit 3 ~ 0]	0FH	00H
VCEN6	Vertical Center (50Hz & 60Hz)	3FH	1BH
HPOS6	Horizontal position (60Hz)	1FH	16H

Table 8-6 Remote key: "5"

Factory menu 5			
Item	Remark ##	Max value	Default
CNTX	Maximum contrast	7FH	7FH
CNTN	Minimum contrast	7FH	10H
BRTX	Maximum brightness	7FH	20H
BRTN	Minimum brightness	7FH	20H
COLX	Maximum color	7FH	7FH
COLN	Minimum color	7FH	00H
TNTX	Maximum tint level	7FH	7FH
TNTN	Minimum tint level	7FH	7FH

Table 8-7 Remote key: "6"

Factory menu 6			
Item	Remark ##	Max value	Default
BRTC	50% brightness	7FH	45H
COLC	50% color	7FH	50H
COLP	PAL system COLC correction	7FH	00H
COLS	SECAM 50% color correction	7F	00H
SCOL	UV gain [06H, bit 6 ~ 4]	07H	07H
SCNT	Sub-contrast [06H, bit 3 ~ 0]	0FH	0CH
CNTC	50% contrast	7FH	4CH
TNTCT	50% tint level (TV mode)	7FH	40H
TNTCV	50% tint level (AV mode)	7FH	40H

Table 8-8 Remote key: "7"

Factory menu 7			
Item	Remark	Max value	Default
ST3	50% Sharpness (TV mode, 3.58 system)	3FH	20H
ST4	50% Sharpness (TV mode, 4.43 system)	3FH	20H
SV3	50% Sharpness (AV mode, 3.58 system)	3FH	20H
SV4	50% Sharpness (AV mode, other system)	3FH	19H
SVD	50% Sharpness (DVD mode)	3FH	19H
ASSH	Asymmetric sharpness [04H, bit 7 ~ 5]	07H	07H

Factory menu 7			
SHPX	Maximum sharpness	3FH	1AH
SHPN	Minimum sharpness	3FH	1AH

Table 8-9 Remote key: "8"

Factory menu 8				
Item	Remark	Max value	Default	
MODE1	Bit 0, Bit 1	CATV selection:00:STD 01:IRC 10:HRC 11:STD	FFH	E0H
	Bit 2	STD/IRC/HRC selection(CATV mode) 1:user control 0:under factory mode		
	Bit 3	=1: Skip A3(97)?A4(96)?A5(95)Channel		
	Bit 4	Super reception (PIC BOOST), 1:YES 0:NO		
	Bit 5	1: CCD (YES) 0: CCD(NO)		
	Bit 6	1:V-CHIP(YES) 0: V-CHIP (NO)		
	Bit 7	1: AV(YES)		
MOD2	Bit 0	Speed of searching	FFH	13H
	Bit 1	Speed of searching		
	Bit 2	=1: TV has color system PALM		
	Bit 3	=1: TV has color system PALN		
	Bit 4	=1: TV has color system NTSC358		
	Bit 5	=1: TV has color system PAL443		
	Bit 6	=1: TV has color system NTSC443		
Bit 7	=1: TV has color system SECAM			
MOD3	Bit 0	0:woofer 1:dbe	FFH	E8H
	Bit 1	0:no woofer and DBE 1:has woofer or DBE		
	Bit 2	=1: Has equalizer		
	Bit 3	=0:V-CHIP(YES), =1 V-CHIP(NO)		
	Bit 4	=1: has volume item in TV MENU		
	Bit 5	TV AVL =1: on; =0: off		
	Bit 6	AV AVL =1: on; =0: off		
Bit 7	MONO+SAP mode 0:no 1:yes (only for BTSC)			
OPT	Bit 0	Blue background off and TV mode no signal,0:MUTE 1:NO MUTE	FFH	3CH
	Bit 1	Blue background off and TV mode no signal,0: external mute on 1: external mute off		
	Bit 2	=1: Vertical frequency output when change channel not via the tune menu		
	Bit 3	=1: picture mute on (Switch between TV and AV or change channel in the tune menu)		
	Bit 4	=1:AFT off while no signal,=0: AFT on while no signal		
	Bit 5	1:TINT reverse using		
	Bit 6	1: NTSC system apply different APC value		
Bit 7	child lock off(When set turn on) 1:not auto clear0: auto clear			
OPTM1	Bit 0 Bit 1	00: 01:DK1, 10:DK2, 11:DK3Note: No effect in NTSC only mode	FFH	64H
	Bit 2	1: AV audio out mute when volume is zero or mute		
	Bit 3	=1: contrast changing when menu on		
	Bit 4	=1: OSD don't disappear automatically		
	Bit 5 Bit 6	Tuner selection:00:T 01:S 10:A 11:P(MK3)		
	Bit 7	0:Color temperature adjust mode, 1:color temperature adjustment mode2(namely, the three kind of color temperature:cool,warm and normal, to be adjusted respectively.		

Factory menu 8				
OPTM2	Bit0	1: OFF set to eliminate brightness	FFH	00H
	Bit1	Power on mode: =0: Sthandby;=1: previous		
	Bit2	=1: Force power on		
	Bit 3	=1: HOTEL mode (ON)		
	Bit 4Bit 5	00: TV ON 01: AV ON 10: TV ON and Channel setting on smallest channel no.(TV,CH2)		
	Bit 6	1: under factory mode turn off the set by the remote or power off, then turn on or power on, the set enter into factory mode and work in aging mode		
	Bit 7	=1: D-MODE		
HDCNT	Examined VSYNC in advance, then examine HSYNC before powering off		FFH	00H
HSTOP	Off the Horizontal or external mute time setting when off set		FFH	FFH

Table 8-10 Remote key: "9"

Factory menu 9			
Item	Remark **	Max value	Default
RFAGC	RFAGC [12H, bit 5 ~ 0]	3FH	25H
BRTS	BRTC Correction	3FH	00H
OSD	OSD Horizontal position adjustment	7FH	21H
OSDF	OSD Character width adjustment	FFH	53H
CCD OSD	CCD OSD Horizontal position adjustment	3FH	4AH
CCD OSDF	CCD OSD Character width adjustment	FFH	65H
TXCX	OSD intensity when maximum contrast	1FH	1FH
RGCN	OSD intensity when minimum contrast	1FH	16H

Table 8-11 Remote key: "0"

Factory menu 10			
Item	Remark ##	Max value	Default
V01	Volume 1 corresponded "volume register" value	3FH	46H
V25	Volume 25 corresponded "volume register" value	3FH	68H
V50	Volume 50 corresponded "volume register" value	3FH	74H
V100	Volume 100 corresponded "volume register" value	3FH	78H
VOLMAX	Max volume under hotel mode	64H	32H
CURTCEN	Center of the curtain	FFH	A5H
GATE	Carrier-Mute setting	FFH	2AH
VOL-OUT	AV Output Voltage setting	7FH	73H

Table 8-12 Remote key: "SCAN_DOWN"

Factory menu 11				
Item	Remark **		Max value	Default
MDOE4	Bit 0	=1:AV AUTO color system includingPAL/SECAM/NTSC358/NTSC443; =0:AV AUTO only include NTSC358,PAL-N,PAL-M	FFH	73H
	Bit 1	=1: AV has color system AUTO		
	Bit 2	=1: AV has color system PAL-M		
	Bit 3	=1: AV has color system PAL-N		
	Bit 4	=1: AV has color system NTSC358		
	Bit 5	=1: AV has color system PAL443		
	Bit 6	=1: AV has color system NTSC443		
	Bit 7	=1: AV has color system SECAM		
MDOE5	Bit 0	=1: Has language English	FFH	0BH
	Bit 1	=1: Has language French		
	Bit 2	=1: Has language Portuguese		
	Bit 3	=1: Has language Spanish		
	Bit 4	=1: Has language german		
	Bit5-Bit7	Not used		

Factory menu 11				
MDOE6	Bit 0	searching when press MENU button on the top panel=1:(YES) 0:(NO)	FFH	01H
	Bit 1	=1: curtain when turn on the set		
	Bit 2	=1: curtain when turn off the set		
	Bit3-Bit7	V-MUTE TIME DURING POS CHANGING 200mS + 8mS * DATA		
MDOE7	Bit 0	when checked different sound source, audio mode =0: no change =1: change	FFH	CBH
	Bit1	when checked different sound source, OSD =0: no change =1: change		
	Bit 2Bit 3	00,10: auto select USA or KOREA; 01:forced to USA; 11:forced to KOREA		
	Bit 4	FINE, 1:(YES) 0:(NO)		
	Bit 5	50Hz block 1:(YES) 0:(NO)		
	Bit 6	=1:contrast and brightness grow up slowly at power on		
	Bit 7	Sound mute mode =1: use the Fast_mute mode =0: use Normal mute mode		
MDOE8	Bit0	=1: Has v-chip USA rating	FFH	0FH
	Bit1	=1: Has v-chip Canada rating		
	Bit2	=1: Has v-chip no rating		
	Bit3	=1: Has v-chip no rating		
	Bit4-Bit7	Time setting for curtain when turn on the set: DATA * 8ms		
MDOE9	Bit0	=1: search mode; =0: scan frequency table mode(for NTSC only!!!!)	FFH	A2H
	Bit1	0= Other menu mode, 1=Philips menu mode		
	Bit2	=1: has sound BG		
	Bit3	=1: has sound I		
	Bit4	=1: has sound DK		
	Bit 5	=1: has sound M		
	Bit6	=1: has sound L		
	Bit7	=1: has CH LOCK menu		
AV GAIN		AV sound input plus	7FH	19H

Table 8-13 Remote key: "SCAN_UP"

Factory menu 12			
Item	Remark ##	Max value	Default
MPB_STR	Effect Strength	7FH	43H
MPB_HMC	Harmonic Content	7FH	0DH
MPB_HP	High Pass Corner Frequency	14H	07H
MPB_LP	Low Pass Corner Frequency	14H	11H
MPB_LIM	Amplitude Limit	20H	00H
SUB_FRE	Subwoofer Corner Frequency	28H	28H
SUB_HP	Subwoofer Complementary High Pass Filter	02H	02H
VOL_MAI	Volume Loudspeaker	03H	00H

Table 8-14 Remote key: "SKIP_DOWN"

Factory menu 13			
Item	Remark ##	Max value	Default
OSD2	OSD Horizontal position adjustment (50%character)	7FH	20H
OSDF2	OSD Character width adjustment(50%character)	FFH	64H
PYNX	Normal H.SYNC max (For blue background ON-OFF)	3FH	28H
PYNN	Normal H.SYNC min (For blue background ON-OFF)	3FH	18H
PYXS	Search H.SYNC max(For searching)	3FH	20H
PYNS	Search H.SYNC min(For searching)	3FH	1AH

Table 8-15 Remote key: "SKIP_UP"

Factory menu 14			
Item	Remark ##	Max value	Default
CLTM	Color register setting(TV mode)	FFH	29H
CLVO	Color register setting(Video mode)	FFH	29H

Factory menu 14					
CLVS	Color register setting(S-video mode)			FFH	29H
	Bit 2 ~ 0	YDL [15H, bit 2 ~ 0] (-40ns~240ns)			
	Bit 4 ~ 3	NTSC matrix [03H, bit 7 ~ 6] (N1,N2,DVD)			
	Bit 5	C gamma [02H, bit 7] (color gamma on/off)			
	Bit 6	P/N ID [17H, bit 4] (PAL/NTSC killer sensit.)			
	Bit 7	FID [17H, bit 3] (Killer off)			
ABL	Bit 1 ~ 0	ABL gain [16H, bit 5 ~ 4]	3FH	27H	
	Bit 3 ~ 2	ABL start point [16H, bit 7 ~ 6]			
	Bit 4	WPS [00H, bit 7]			
	Bit 5	OSD ABCL [16H, bit 3]			
DCBS	Bit 1 ~ 0	Black stretch [15H, bit 4 ~ 3]	FFH	14H	
	Bit 3 ~ 2	Y gamma[15H, bit 6 ~ 5]			
	Bit 5 ~ 4	OSD level[16H, bit 1 ~ 0]			
	Bit 7	Blank switch[0CH, bit 7]			
FLG0	Bit 0	Over modulation [13H, bit 5]	FFH	83H	
	Bit 1	Aft window size [13H, bit 6]			
	Bit 2	Buzz reducer [13H, bit 7]			
	Bit 3	Audio gain switch [14H, bit 7]			
	Bit 4				
	Bit 5				
	Bit 6				
Bit 7	1: VCO adjust automatically when changing channel				
FLG1	Bit 0	CW SW [06H, bit 7], control PIN26,	FFH	2CH	
	Bit 1	Slice level [1EH, bit 6]			
	Bit 2	Mix gain [15H, bit 7]			
	Bit 3	V ramp bias [1DH, bit 4]			
	Bit 6~4	RF setting, 011: 38.9MHz, 010: 45.75MHz, 100: 38.00Mh			
	Bit 7	SLO f0 shift(test only)			

Table 8-16 Remote key: "SLOW_DOWN"

Factory menu 15				
Item	Remark ##		Max value	Default
HAFC	Bit 1 ~ 0	AFC gain (TV mode) [1CH, bit 5 ~ 4]	0FH	09H
	Bit 3 ~ 2	AFC gain (AV mode) [1CH, bit 5 ~ 4]		
AGCC	Not Applicable		F2H	1CH
NOIS	Bit 1 ~ 0	Used to read the register R3 AFC gain 01 (TV mode) [bit 5 ~ 6]when bigger than the reference valueor AFC gain 00 (TV mode) [bit 5 ~ 6]	07H	04H
	Bit 2	0: AFC gain as above 1: HAFC (TV mode)		
ONTM	V-mute timing when power on (01H = 16ms)		FFH	08H
NSHP	Decreased level of sharpness when noise reduction is on		3FH	1AH
PVLVL	X-ray protection start point		FFH	68H
PLMT	Time setting When X-ray protection start point below PVLVL ,(01H = 8ms)		FFH	50H

Table 8-17 Remote key: "SLOW_UP"

Factory menu 16			
Item	Remark ##	Max value	Default
D-COL	Dynamic color setting	64H	23H
D-BRI	Dynamic brightness setting	64H	28H
D-CON	Dynamic contrast setting	64H	50H
D-SHP	Dynamic sharpness setting	64H	3CH

Table 8-18 Remote key: "R/L"

Factory menu 17			
Item	Remark ##	Max value	Default
S-COL	Standard color setting	64H	23H
S-BRI	Standard brightness setting	64H	26H

Factory menu 17			
S-CON	Standard contrast setting	64H	3CH
S-SHP	Standard sharpness setting	64H	32H

Table 8-19 SEARCH MODE”

Factory menu 18			
Item	Remark ##	Max value	Default
M-COL	Mild color setting	64H	1EH
M-BRI	Mild brightness setting	64H	2DH
M-CON	Mild contrast setting	64H	46H
M-SHP	Mild sharpness setting	64H	19H

Table 8-20 Remote key: “LANGUAGE”

Factory menu 19			
Item	Remark ##	Max value	Default
T-Hz120-BAS	Theater mode, below 120Hz/ Bass	64H	5AH
T-Hz500-TRE	Theater mode,center 500Hz/Treble	64H	5AH
T-Hz1K5	Theater mode,center 1.5kHz	18H	0CH
T-Hz5K	Theater mode,center 5kHz	18H	0CH
T-Hz10K	Theater mode,above 10kHz	18H	0CH

Table 8-21 Remote key: “ANGLE”

Factory menu 20			
Item	Remark ##	Max value	Default
C-Hz120-BAS	Concert mode, below 120Hz/ Bass	64H	32H
C-Hz500-TRE	Concert mode,center 500Hz/Treble	64H	32H
C-Hz1K5	Concert mode,center 1.5kHz	18H	0CH
C-Hz5K	Concert mode,center 5kHz	18H	0CH
C-Hz10K	Concert mode,above 10kHz	18H	0CH

Table 8-22 Remote key: “SUBTITLE”

Factory menu 20			
Item	Remark ##	Max value	Default
C-Hz120-BAS	Concert mode, below 120Hz/ Bass	64H	32H
C-Hz500-TRE	Concert mode,center 500Hz/Treble	64H	32H
C-Hz1K5	Concert mode,center 1.5kHz	18H	0CH
C-Hz5K	Concert mode,center 5kHz	18H	0CH
C-Hz10K	Concert mode,above 10kHz	18H	0CH

Table 8-23 Remote key: “ZOOM”

Factory menu 22			
Item	Remark ##	Max value	Default
YUVGC	YUV mode R cut-off compensation	3FH	03H
YUVBC	YUV B cut-off	3FH	03H
WAIT_TIME	Time for DVD power off	FEH	30H
SAVE_TIME	Time for DVD Last memoryNote: DVD waiting time= X 32ms	FEH	30H
PWOERTIME	Brightness and contrast reversion time while power on	FFH	00
SECAM B-Y	SECAM middle color		07H
SECAM R-Y	SECAM middle color		07H

Table 8-24 Remote key: “REPEAT”

Factory menu 23			
Item	Remark##	Max value	Default
Media-COL	Mild color setting		28
Media-BRI	Mild color setting		2D
Media-CON	Mild color setting		4B
Medila-SHP	Mild color setting		37
Medila-COLOR	OSD background and cursor color setting		44

Factory menu 23			
Char-COLOR	OSD character color setting		67
Set On time	RGB time setting when power on		80

Instruction for Tuner

This procedure require the tuner accord with the following conditions:

1. The below table must be followed

S/N	Content	Value	Remarks
0	Address(ADB)	0XC0	
1	Program divider(DB1)	Channel corresponded sub-channel value	
2	Program divider(DB2)		
3	Control informtion(CB)	0XCE	Step Length:62.5KHz
4	Bandswitch(BB)	Decided by supplier material	Table 2.2

2. Tuner Setting for this procedure

Table 8-25 Band level

Tuner Select- tion(OPTM1Bit6 and Bit5)	Band level (Picture frequency)MHz		
	Low band	Mid band	High band
01			
00/10			
11			

Table 8-26 Bandwith

Tuner Selecttion (OPTM1Bit6?Bit5)	Bandswitch value			Remarks
	Low band	Mid band	High band	
01	0X01	0X02	0X04	
00/10	0X01(6ch 0X05)	0X02	0X08	Special deal with CH6
11	0X01(6ch 0X41)	0X42	0X04	Special deal with CH6 and mid-band-width

Table 8-27 Model No. accord with this procedure

Tuner selection (OPTM1Bit6?Bit5)	Supplier	Supplier BOM(For refer- ence)	BOM (For reference)
01	P		UV1336/AGN-2
	T/S		2000NJ-5
00/10	A		TEDH9
11	P(MK3)		UV1336I/AGGS-3

Note:

- The above information is just for reference. Please follow project manager's document while producing
- While check locking function, key checking channels are those nearing every subsection frequency of the band

Volume count

The relationship of the volume variable and the Audio data(uPC1815)

Volume Range :0-100; Audio data Range :0-0x3f

CONDITION		FORMULA
volume<=1		Audio data = volume \times V01/1
volume<=25	V25>V01	Audio data = (volume-1) \times (V25-V01)/24+V01
	V25<=V01	Audio data = V01
volume<=50	V50>V25	Audio data = (volume-25) \times (V50-V25)/25+V25
	V50<=V25	Audio data = V25
volume>50	V100>V50	Audio data = (volume-50) \times (V100-V50)/50+V50
	V100<=V50	Audio data = V50

Adjustment of White Balance.

TMP8823PSAN IC addressed **0x88(136)**, EEPROM IC addressed **0x01(160)**(Just for white balance)

Parameter address

Item	OSD Display	Register Address	EEPROM Stored address
R CUT OFF	RCUT	08	0x40(64)
G CUT OFF	GCUT	09	0x41(65)
B CUT OFF	BCUT	0x0A(10)	0x42(66)
G DRIVE	GDRV	0x0B(11)	0x43(67)
B DRIVE	BDRV	0x0C(12)	0x44(68)
R CUT OFF(COOL)	RC-C	08	0x45(69)
G CUT OFF(COOL)	GC-C	09	0x46(70)
B CUT OFF(COOL)	BC-C	0x0A(10)	0x47(71)
G DRIVE(COOL)	GD-C	0x0B(11)	0x48(72)
B DRIVE(COOL)	BD-C	0x0C(12)	0x49(73)
R CUT OFF(WARM)	RC-W	08	0x4A(74)
G CUT OFF(WARM)	GC-W	09	0x4B(75)
B CUT OFF(WARM)	BC-W	0x0A(10)	0x4C(76)
G DRIVE(WARM)	GD-W	0x0B(11)	0x4D(77)
B DRIVE(WARM)	BD-W	0x0C(12)	0x4E(78)

8.5 ADDITIONAL INSTRUCTION

1. Press "PLAY/PAUSE" button of remote control to enter or quit D-MODE directly(OPTM2 Bit7=1)
2. The "PLAY/PAUSE" button recover to normal function when finishing D-MODE, Namely OPTM2 Bit7 sets 0 automatically. If you want to enter into the D-MODE again, press the "volume" button on the top panel to reduce the volume till zero ,and simultaneously press the "0"button of the remote control three times continuously within 15 seconds . and then enter into D-MODE .Press the "MENU" button of the remote control to quit.
3. When PIN NO. input or V-CHIP, Press the "CH+▲?" button on the top panel, simultaneously press the "▶" button of the remote control, and then you can input the new password.
4. Press "ENTER" button to select the item, when the hour character change to purple, now you can input directly. Press "ENTER" button to recover.
5. Press the "ENTER" button of the remote control in factory mode unit the screen display MEUN TOP. Press "CH+▲ CH-▼" button to switch different factory menu, Press the "ENTER" button again will return to previous mode

6. Items marked with "*" in D-MODE could be used to set different data. In order to satisfy different customer, different picture tube, and different order requirement.
7. Items marked with "#" in D-MODE are the best value which designed according to the technical specification standard, performance requirement. If there is no new changing material from design center. The D-MODE pre-setting value don't need to adjust (default value).

Note:

1. Auto turn off, when turning on via timer and no operation within 30 minutes
2. Auto turn off, If Smart Timer on and no operation within 4 hours in TV mode
3. Timer OFF is priority to Timer ON when time setting is the same.
4. Auto turn off when TV no signal (blue background on) and no operation within 15 minutes (Note: Under the four type of auto turn off , If the user follow the "the last minute" operation , the clock symbol will glitter on the top left screen in the last minute. while not follow, The glitter will not display.)
5. Factory OK mode

Recover to initial status and make the directly enter D-MODE off.
Picture status :Sport, Personal setting is the same to Movies; Color temperature :cool; Noise Reduction: off;
User Volume:30; S.effect: Theater; Personal setting same to Theater; Surround on ?
C.Capt OFF; V-CHIP OFF; V-CHIP Initial Password: 0000,
1) TV? VIDEO system are priority to AUTO system .
2) When factory setting hasn't AUTO, the set will inspect NTSC3.58? PALM? PALN in sequence and initialize any system that exist in this set. If factory don't set any system on this set. It will initialized AUTO as default setting
When receiving MON&STEREO, Initialized STEREO
When receiving MON&SAP, Initialized MONO
When receiving MON&STEREO&SAP, Initialized STEREO
1) When Initial mode is ANTENNA mode, initial channel : CH3(CABLE mode), CH3(ANTENNA mode), CH2(Recall CABLE Channel)
2) When mode1.2 is 1:STD(CABLE); When mode1.2 is 0, dicided by mode1.0& mode1.1
3) Prefer channel: CH1, CH2, CH3, CH4, CH5, (CABLE mode) corresponded CH2, CH3, CH4, CH5, CH6, CH7, (ANTENNA mode)
Off Time: OFF, 0:00; On Time: OFF;
When Tuner Mode is set to Antenna, set the Channel to 1;
When Tuner Mode is set to Cable, set the Channel to 2.
Besides, set Smart time off.
Initial language: ENGLISH

Note:

- Provided the production line is equipped with the self-adjusting equipment, The adjusted item should be based on the result by such equipment.

- There's difference between PAL geometric/OSD adjustment and NTSC geometric/OSD adjustment. PAL adjustment must be done before NTSC adjustment.

9. Circuit Description

1. Introduction
2. Audio Signal Processing
3. Video Signal Processing
4. Synchronization and deflection processing circuit
5. Power Supply
6. Control
7. Abbreviations
8. IC Data Sheets

Notes:

- For a good understanding of the following circuit descriptions, please use the block diagram and/or the electrical diagrams in section 'Block Diagram and Electrical Diagram'. Where necessary, you will find a separate drawing for clarification.
- Figures below can deviate slightly from the actual situation due to different set executions.

9.1 Introduction

The main chip of this chassis apply TOSHIBA company Super-signal IC. Which contain MCU control, TV manage, AV Switch, Horizontal, Vertical etc. small signal disposing. Thus

make the set has powerful function, High integration, fewer Periphery parts, not need to any additional adjustment to achieve PIF, SIF, AFC alignment status; Apply signal-crystal structure and use the internal 640Fh VCO, Frequency division and counter to attain strict sync. Signal and steady Vertical or Horizontal pulse signal even sub-carrier wave resume signal of all aeras's color systems. Which provide the advantageous qualification for designing the multi-system international TV. Regarding sound, the chassis which apply German MICROANS company MSP3425G chip to achieve BTSC/SAP demodulation and all kinds of S-effect disposing, and meanwhile via the software setting to select MSP3465G pure s-effect IC to enhance the sound effect under the condition that when no BTSC/SAP function. In addition, added real time clock smart timer, cool-warm color Temp., Calendar, simulate biologic-clock, personal channel setting, hotel lock functions via the software designing. Which improve the software additional value. DVD design which apply SANYO DV34 DVD Loader and MTK company MTK1379C and MTK1336C decoder and servo module. This project which is one of the world advanced DVD design projects, read disc smoothly, powerful compatibility, super correct defects ability etc.

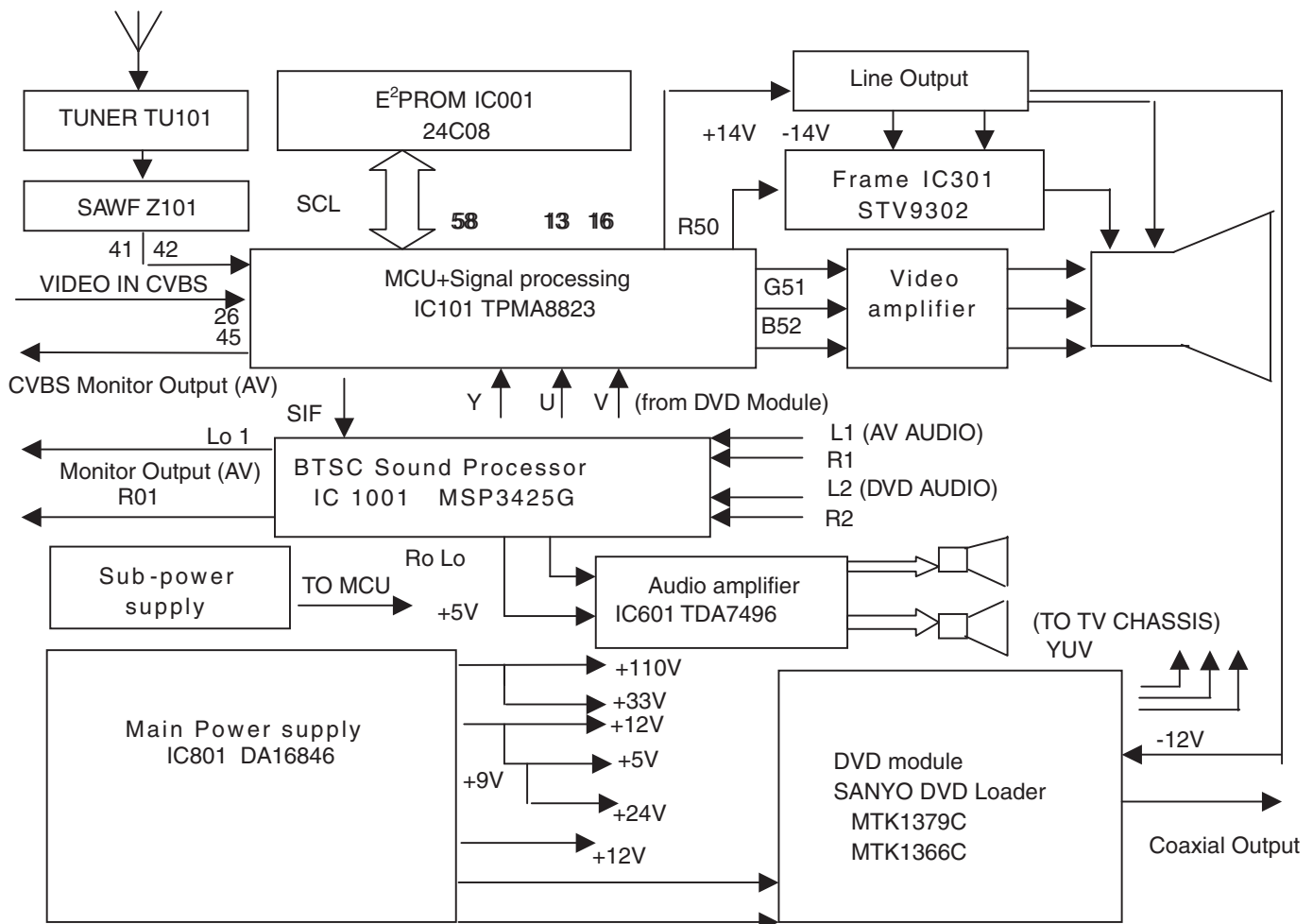


Figure 9-1 Block Diagram

9.2 Audio Signal Processing

Stereo

In stereo sets, the signal goes via the SAW filter (position Z10A), to the audio demodulator part of the UOC IC101. The audio output on pin 31 goes to the stereo decoder IC1001. The

switch inside this IC selects either the internal decoder or an external source (see also block diagram above).

The built-in stereo decoder item IC1001 (MSP3425G) can receive 2CS, NICAM and BTSC stereo signals. The output is fed ic601 to the audio amplifier (TDA7496 at position IC601). The volume level is controlled at this IC (pin 10) by a 'Mute'

control line from the microprocessor. The audio signal from IC601 is then sent to the speaker and headphone output panel.

9.3 Video Signal Processing

9.3.1 Introduction

The video signal-processing path consists of the following parts:

- RF signal processing.
- Video source selection.
- Video demodulation.
- Luminance/Chrominance signal processing
- RGB amplifier

The processing circuits listed above are all integrated in the UOC TV processor. The surrounding components are for the adaptation of the selected application. The I2C bus is for defining and controlling the signals.

9.3.2 RF Signal Processing

The incoming RF signal goes to the tuner (pos. TU101), where the IF signal is developed and amplified. The IF signals then exit the tuner from pin 11 to pass through the SAW filter (pos. Z101). The shaped signal is then applied to the IF processor part of the UOC (pos. IC101).

Tuner AGC (Automatic Gain Control) will reduce the tuner gain and thus the tuner output voltage when receiving strong RF signals. Adjust the AGC takeover point via the Service Default Alignment Mode (SDAM). The tuner AGC starts working when the video-IF input reaches a certain input level and will adjust this level via the I2C bus. The tuner AGC signal goes to the tuner (pin 1) via the open collector output (pin 43) of the UOC. The IC also generates an Automatic Frequency Control (AFC) signal that goes to the tuning system via the I2C bus, to provide frequency correction when needed. The demodulated composite video signal is available at pin 30 and then buffered by transistor Q203.

9.3.3 Video Source Selection

The Composite Video Blanking Signal (CVBS) from buffer Q201 goes to the audio carrier trap filters 1200, 1201, or 1202 (depending on the system used), to remove the audio signal. The signal then goes to pin 26 of IC 101. The internal input switch selects the following input signals:

- Pin 26: terrestrial CVBS input
- Pin 24: external AV1 CVBS input
- Pin 19,20,21: external DVD YUV signal input

Once the signal source is selected, a chroma filter calibration is performed. The received color burst sub-carrier frequency is used for this. Correspondingly, the chroma band pass filter for PAL/NTSC processing is switched on. The selected luminance (Y) signal is supplied to the horizontal and vertical synchronization circuit and to the luminance processing circuit. In the luminance processing block, the luminance signal goes to the chroma trap filter. This trap is switched 'on' or 'off' depending on the color burst detection of the chroma calibration circuit.

The group delay correction part can be switched between the BG and a flat group delay characteristic. This has the advantage that in multi-standard receivers no compromise has to be made for the choice of the SAW filter.

9.3.4 Video Demodulation

The IF channel mainly ensures the sensitivity and selectivity of the complete machine. The IF AMP integrated in TMPA8823 is made up of the third-stage dual-differential amplifier with gain value above 70dB, SNR of 55Db and bandwidth of 6MHz. The video demodulation circuit is made from the built-in PLL Sync detector. The spectrum of the demodulation carrier is unitary

and not affected by the content of the video signal. The tuner features stable receptivity while the signal output from the video detector features high fidelity.

PLL built-in PMPA8823 generates 45.75MHz demodulation reference signal for Sync detector to demodulate the video signal, which is called 'PLL Sync demodulation'.

9.3.5 Chrominance signal Processing

Through the external BPF (band-pass filter) to single out the chroma signal and burst signal within the range of $F_{sc} + 1.3\text{MHz}$ from among the composite signals output from the video detector. After being amplified by ACC, the chroma signal is fed into the synchronous detector to be demodulated to obtain the color difference signal.

9.3.6 Luminance channel and matrix circuit

The luminance channel of TMPA8823 has the black stretch circuit to make the 'darkish' ingredient of the picture turn 'atrous', thus improve the contrast and depth perception of the picture. It also has the delayed definition-enhanced circuit to enable the details of the picture more vivid. The luminance signal (Y) is sent into the matrix circuit after being delayed for 0.6s and composed R/G/B signal combined with three color-difference signals (B-Y, R-Y, B-Y).

9.3.7 CRT Drive Circuit

Adopting the cascode to amplify voltage and current of R/G/B signal, the CRT drive circuit is able to demodulate the cathode beam current of the CRT. The R/G/B signal input into the cascode circuit is of negative polarity.

9.4 Sync Separation and Deflection Processing Circuit

TMPA8823 has the 32fh PLL (fh = horizontal frequency). In accordance with the frequency and phase information carried by composite sync signal, PLL generates scan clock signal with 32fh and horizontal drive pulse will be obtained through 32fh countdown. Use integrating circuit to extract vertical sync signal from the composite sync pulse to control the counter for vertical countdown. The counter countdown the 32fh clock signal, thus vertical frequency sync pulses under various systems can be obtained.

TMPA8823 includes the vertical SW former (sawtooth wave former) and control the gain and linear of SW (sawtooth wave). Therefore, the vertical amplitude control and the linearity correction of the scanning raster can be achieved by setting the data with remote controller via I2C bus input.

9.5 Power Supply

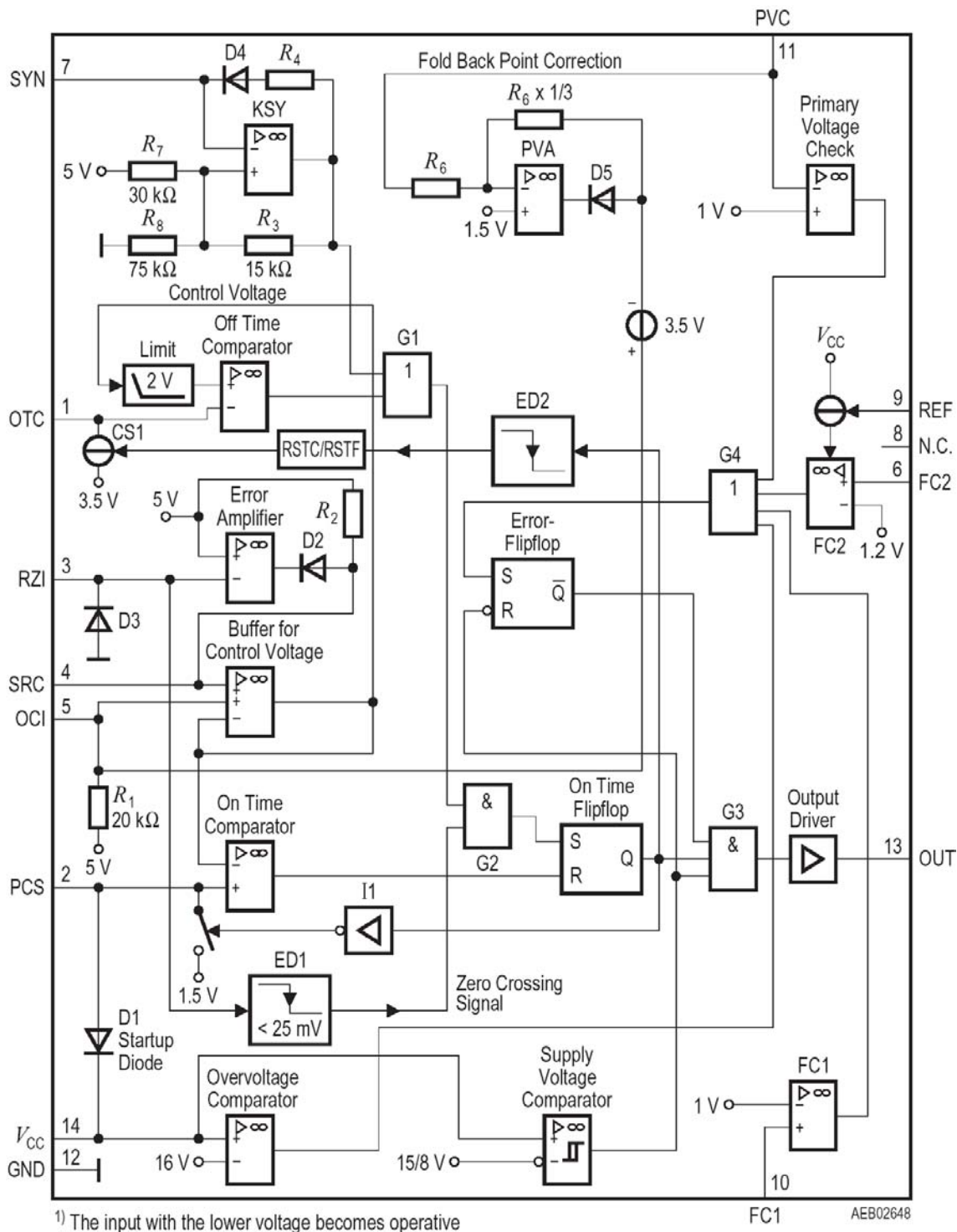


Figure 9-2 Figure 9-2 Internal block diagram of the driver IC (TDA16846)

9.5.1 Introduction

The supply is a Switching Mode Power Supply (SMPS). The frequency of operation varies with the circuit load. The power supply starts operating when a DC voltage goes from the rectifier circuit (D810-D804) via T803, R812 to pin 14. The operating voltage for the driver circuit is also taken from the 'hot' side of this transformer.

The switching regulator IC 801 starts switching the FET (Q801) 'on' and 'off', to control the current flow through the primary winding of transformer T803. The energy stored in the primary winding during the 'on' time is delivered to the secondary windings during the 'off' time.

The 'MainSupply' line is the reference voltage for the power supply. It is sampled by resistors R840, VR821 and R841, regulator IC803 can get different output by adjusting VR821. This regulator drives the feedback opto-coupler IC802 to set the feedback control voltage on pin 5 of IC801. The power supply in the set is 'on' any time AC power goes to the set.

Derived Voltages

The voltages supplied by the secondary windings of T5520 are:

- +24V derived from pin 10 of T803 and +12V derived from pin 16 of T803 are for the audio circuit

- +12V derived from pin 12 of T803, -14V derived from pin 4 of LOT T402 and +5V derived from pin 13 of T803 are for the DVD module
- 'MainSupply' for the horizontal output, +33V for tuning system is the secondary output of Mainsupply
- +9V is the secondary output of +12V, +5V is derived from +9V by regulator IC103, these two voltages are for UOC, signal processing circuit.

Other supply voltages are provided by the LOT. It supplies +14V and -14V for the Frame deflection circuit, +200 V source for the video drive. The secondary voltages of the LOT are monitored by the 'EHT information' lines. These lines are fed to the video processor part of the UOC IC 101 on pins 2 and 27. This circuit will shut 'off' the horizontal drive in case of overvoltage or excessive beam current.

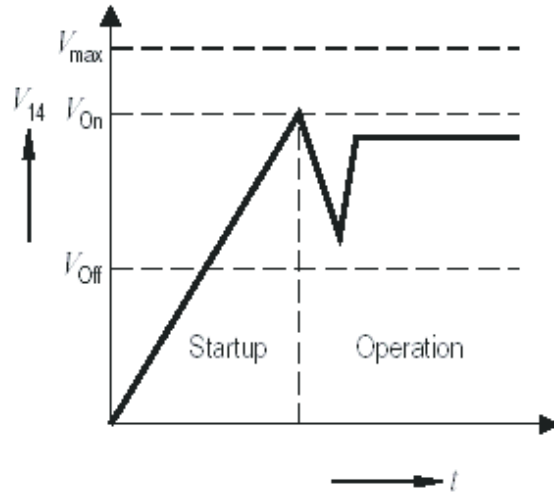


Figure 9-4 Startup Voltage Diagram

9.5.2 Basic IC Functionality Description

The TDA 16846 is optimized to control free running or fixed frequency flyback converters with or without Power Factor Correction (Current Pump). To provide low power consumption at light loads, this device reduces the switching frequency continuously with load, towards an adjustable minimum (e. g. 20 kHz in standby mode). Additionally, the start up current is very low. To avoid switching stresses of the power devices, the power transistor is always switched on at minimum voltage. A special circuit is implemented to avoid jitter. The device has several protection functions: VCC over- and undervoltage, mains undervoltage, current limiting and 2 free usable fault comparators. Regulation can be done by using the internal error amplifier or an opto coupler feedback (additional input). The output driver is ideally suited for driving a power MOSFET, but it can also be used for a bipolar transistor. Fixed frequency and synchronized operation are also possible. The TDA 16846 is suited for TV-, VCR- sets and SAT receivers. It also can be good used in PC monitors.

Start Up Behaviour (Pin 14)

When power is applied to the chip and the voltage V14 at Pin 14 (VCC) is less than the upper threshold (VON) of the Supply Voltage Comparator (SVC), input current I14 will be less than 100 mA. The chip is not active and driver output (Pin 13) and control output (Pin 4) will be actively held low. When V14 exceeds the upper SVC threshold (VON) the chip starts working and I14 increases. When V14 falls below the lower SVC threshold (VOFF) the chip starts again at his initial condition. **Figure 9-3** shows the start-up circuit and **Figure9-4** shows the voltage V14 during start up. Charging of C14 is done by resistor R2 of the "Primary Current Simulation" (see later) and the internal diode D1, so no additional start up resistor is needed. The capacitor C14 delivers the supply current until the auxiliary winding of the transformer supplies the chip with current through the external diode D14.

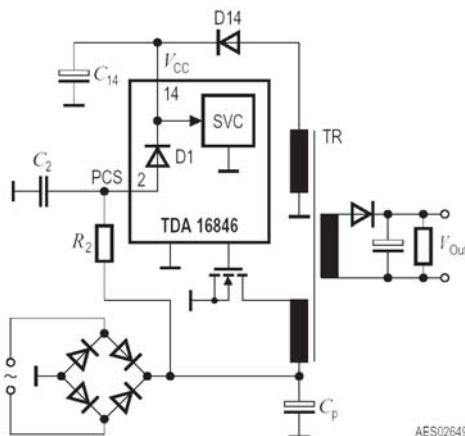


Figure 9-3 Startup Circuit

Primary Current Simulation PCS (Pin 2) / Current Limiting

A voltage proportional to the current of the power transistor is generated at Pin 2 by the RC-combination R2, C2 (**Figure 9-3**). The voltage at Pin 2 is forced to 1.5 V when the power transistor is switched off and during its switch on time C2 is charged by R2 from the rectified mains. The relation of V2 and the current in the power transistor (Iprimary) is

$$V_2 = 1,5 V + \frac{L_{primary} \times I_{primary}}{R_2 \times C_2}$$

Lprimary: Primary inductance of the transformer
The voltage V2 is applied to one input of the On Time Comparator ONTC (see **Figure 9-2**). The other input is the control voltage. If V2 exceeds the control voltage, the driver switches off (current limiting). The maximum value of the control voltage is the internal reference voltage 5 V, so the maximum current in the power transistor (IMprimary) is

$$I_{Mprimary} = \frac{3,5 V \times R_2 \times C_2}{L_{primary}}$$

The control voltage can be reduced by either the Error Amplifier EA (current mode regulation), or by an opto coupler at Pin 5 (regulation with opto coupler isolation) or by the voltage V11 at Pin 11 (Fold Back Point Correction).

Fold Back Point Correction PVC (Pin 11)

V11 is deviated by a voltage divider from the rectified mains and reduces the limit of the possible current maximum in the power transistor if the mains voltage increases. I.e. this limit is independent of the mains (only active in free running mode). The maximum current (IMprimary) depending on the voltage V11 at Pin 11 is

$$I_{Mprimary} = \frac{(4 V - V_{11}/3) \times R_2 \times C_2}{L_{primary}}$$

Off-Time Circuit OTC (Pin 1)

Figure 9-5 shows the Off-Time Circuit which determines the load dependent frequency course. When the driver switches off (**Figure9-6**) the capacitor C1 is charged by current I1 (approx. 1

mA) until the capacitor's voltage reaches 3.5 V. The charge time TC1 is

$$TC1 \approx \frac{C_1 \times 1,5 V}{1 mA}$$

For proper operation of the special internal anti jitter circuit, TC1 should have the same value as the resonance time "TR" of the power circuit (Figure 9-6). After charging C1 up to 3.5 V the current source is disconnected and C1 is discharged by resistor R1. The voltage

V₁ at Pin 1 is applied to the Off-Time Comparator (OFTC). The other input of OFTC is the control voltage. The value of the control voltage at the input of OFTC is limited to a minimum of 2 V (for stable frequency at very light load). The On-Time Flip Flop (ONTF)

is set, if the output of OFTC is high 1) and the voltage V₃ at Pin 3 falls below 25 mV (zero crossing signal is high). This ensures switching on of the power transistor at minimum voltage. If no zero crossing signal is coming into pin 3, the power transistor is switched

on after an additional delay until V₁ falls below 1.5 V (see Figure 9-5, OFTCD). As long as V₁ is higher than the limited control voltage, ONTF is disabled to suppress wrong zero crossings of V₃, due to parasitic oscillations from the transformer after switch-off. The discharge time of C1 is a function of the control voltage.

1) i.e. V₁ is less than the limited control voltage.

Control Voltage	Output Power	Off-time TD1
1.5 - 2 V	Low	Constant (TD1MAX.), const. frequency stand by
2 - 3.5 V	Medium	Decreasing
3.5 - 5 V	High	Free running, switch-on at first minimum

If the control voltage is below 2 V (at low output power) the "off-time" is maximum and constant

$$TD1_{MAX} \approx 0.47R1 \times C1$$

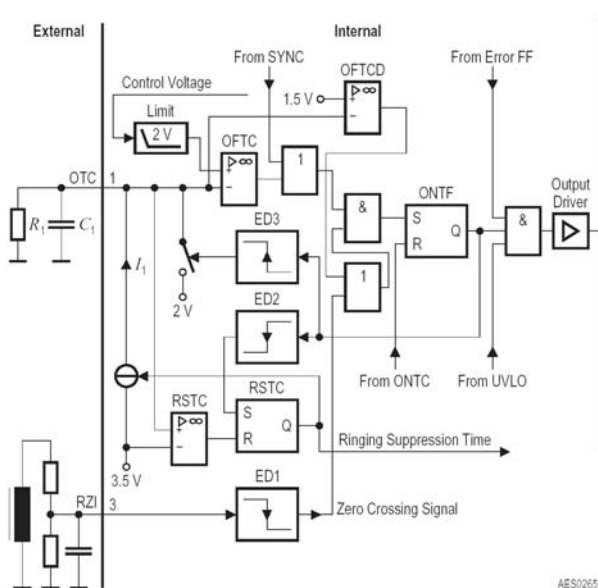


Figure 9-5 Off-Time-Circuit

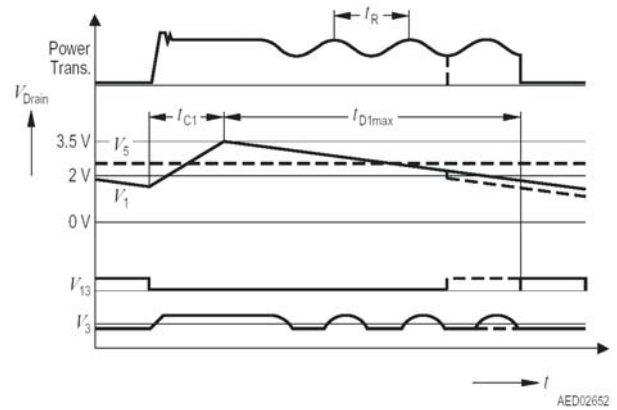


Figure 9-6 Pulse Diagram of Off-Time-Circuit

Figure 9-7 shows the converters switching frequency as a function of the output power.

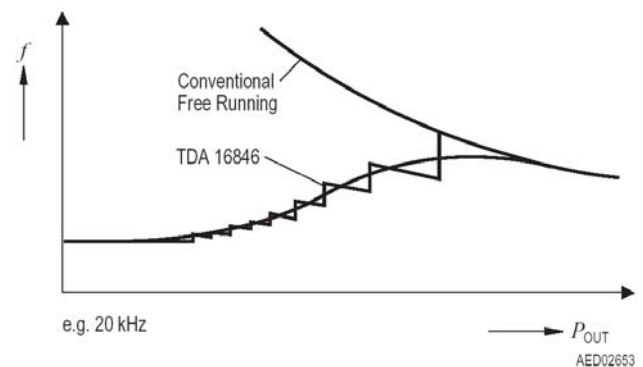


Figure 9-7 Load Dependant Frequency Course

Error Amplifier EA / Soft-Start (Pin 3, Pin 4)

Figure 9-8 shows the simplified Error Amplifier circuit. The positive input of the Error Amplifier (EA) is the reference voltage 5 V. The negative input is the pulsed output voltage from the auxiliary winding, divided by R31 and R32. The capacitor C3 is dimensioned only for delaying zero crossings and smoothing the first spike after switchoff. Smoothing of the regulation voltage is done with the soft start capacitor C4 at Pin 4. During start up C4 is charged with a current of approx. 2 mA (Soft Start). Figure9-9 shows the voltage diagrams of the Error Amplifier circuit.

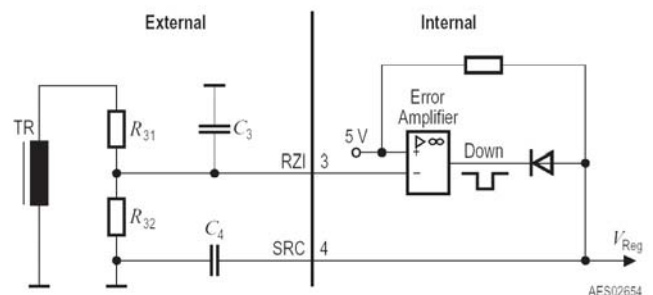


Figure 9-8 Error Amplifier

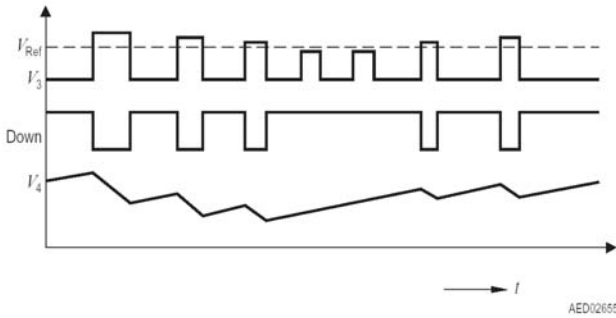


Figure 9-9 Regulation Pulse Diagram

Fixed Frequency and Synchronization Circuit SYN (Pin 7)

Figure 9-10 shows the Fixed Frequency and Synchronization Circuit. The circuit is disabled when Pin 7 is not connected. With R7 and C7 at Pin 7 the circuit is working. C7 is charged fast by approx. 1 mA and discharged slowly by R7 (Figure 9-10). The power transistor is switched on at beginning of the charge phase. The switching frequency is (charge time ignored)

$$f \approx \frac{1,18}{R_7 \times C_7}$$

When the oscillator circuit is working the Fold Back Point Correction is disabled (not necessary in fixed frequency mode). "Switch on" is only possible when a "zero crossing" has occurred at Pin 3, otherwise "switch-on" will be delayed (Figure 9-10).

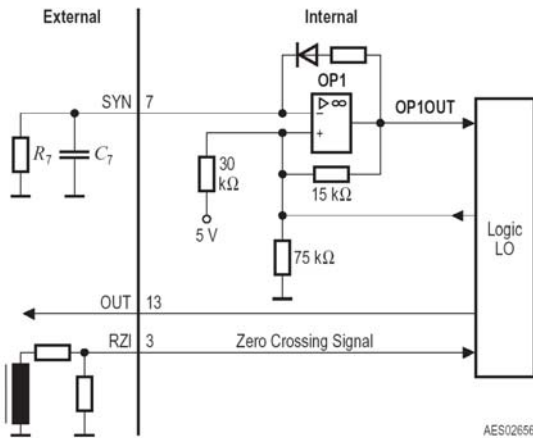


Figure 9-10 Synchronization and Fixed Frequency Circuit

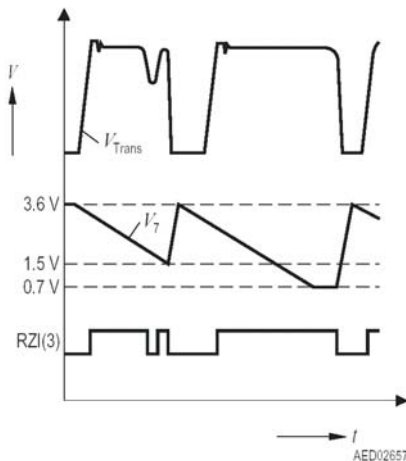


Figure 9-11 Pulse Diagram for Fixed Frequency Circuit

Synchronization mode is also possible. The synchronization frequency must be higher than the oscillator frequency.

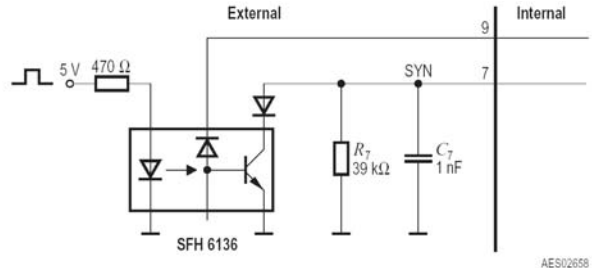


Figure 9-12 Ext. Synchronization Circuit

9.5.3 Protection Functions

The chip has several protection functions:

Current Limiting

See "Primary Current Simulation PCS (Pin 2) / Current Limiting" and "Fold Back Point Correction PVC (Pin 11)".

Over- and Undervoltage Lockout OV/SVC (Pin 14)

When V14 at Pin 14 exceeds 16 V, e. g. due to a fault in the regulation circuit, the Error Flip Flop ERR is set and the output driver is shut-down. When V14 goes below the lower SVC threshold, ERR is reset and the driver output (Pin 13) and the soft-start (Pin 4) are shut down and actively held low.

Primary Voltage Check PVC (Pin 11)

When the voltage V11 at Pin 11 goes below 1 V the Error Flip Flop (ERR) is set. E.g. a voltage divider from the rectified mains at Pin 11 prevents from high input currents at too low input voltage.

Free Usable Fault Comparator FC1 (Pin 10)

When the voltage at Pin 10 exceeds 1 V, the Error Flip Flop (ERR) is set. This can be used e. g. for mains overvoltage shutdown.

Free Usable Fault Comparator FC2 (Pin 6)

When the voltage at Pin 6 exceeds 1.2 V, the Error Flip Flop (ERR) is set. A resistor between Pin 9 (REF) and ground is necessary to enable this fault comparator.

Voltage dependent Ringing Suppression Time

During start-up and short-circuit operation, the output voltage of the converter is low and parasitic zero crossings are applied for a longer time at Pin 3. Therefore the Ringing Suppression Time TC1 (see "Off-Time Circuit OTC (Pin 1)") is made longer with factor 2.5 at low output voltage. To ensure start-up of the circuit, the value of resistor R1 (Pin 1, Figure 9-5) must be higher than 20 kΩ.

9.6 Control

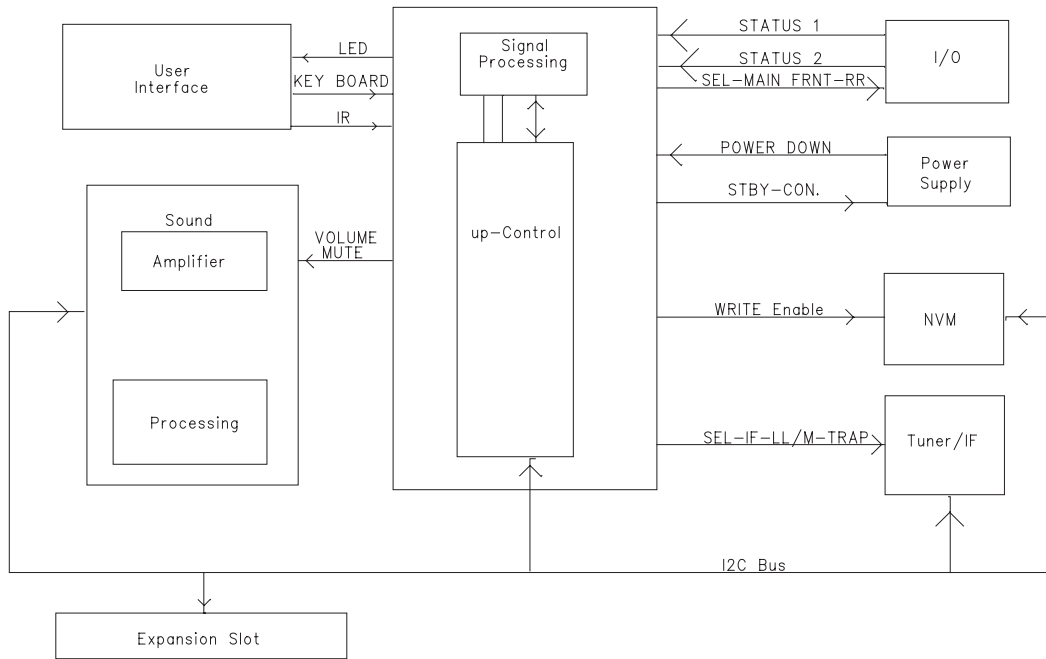


Figure 9-13 lock diagram set control

9.6.1 Introduction

The microprocessor part of the UOC, has the complete control on board. User menu, Service Default Mode, Service Alignment Mode and Customer Service Mode are generated by the uP. Communication to other ICs is done via the I2C-bus.

9.6.2 I2C-Bus

The main control system, which consists of the microprocessor part of the UOC (IC101), is linked to the external devices (tuner, NVM, MSP, etc) by means of the I2C-bus. An internal I2C-bus is used to control other signal processing functions, like video processing, sound IF, vision IF, synchronization, etc.

9.6.3 User Interface

The M133 uses a remote control with RC5 protocol. The incoming signal is connected to pin 63 of the UOC. The 'Top Control' keyboard, connected to UOC pin 3, can also control the set. Button recognition is done via a voltage divider. The front LED (D401) is connected to an output control line of the microprocessor (pin 56). It is activated to provide the user information about whether or not the set is working correctly (e.g., responding to the remote control, normal operation (USA only) or fault condition)

9.6.4 In- and Output Selection

For the control of the input and output selections, there are three lines:

STATUS1. In the TV mode, it outputs TV signal, including VIDEO and AUDIO signal.

STATUS2. In the AV mode, it outputs AV signal, including VIDEO and AUDIO signal.

STATUS3. In the DVD mode, it outputs DVD signal, including VIDEO and AUDIO signal.

9.6.5 Power Supply Control

The microprocessor part is supplied with 5V derived from the 'MainAux' voltage via a 5V stabilizer (D817) and a diode. Two signals are used to control the power supply:

Stdby_con. This signal is generated by the microprocessor when over-current takes place at the 'MainAux' line. This is done to enable the power supply into standby burst mode, and to enable this mode during a protection. This signal is 'low' under normal operation conditions and goes to 'high' (5V) under 'standby' and 'fault' conditions.

POWER_DOWN. This signal is generated by the power supply. Under normal operating conditions, this signal is 'high' (5 V). During 'standby' mode, this signal is a pulse train of approx. 10 Hz and a 'high' duration of 5 ms. It is used to give information to the UOC about the fault condition in the Audio amplifier supply circuit. This information is generated by sensing the current on the 'MainAux' line (using voltage drop across R249 to trigger Q207). This signal goes 'low' when the DC-current on the 'MainAux' line exceeds 1.6 - 2.0 A. It is also used to give an early warning to the UOC about a power failure. Then the information is used to mute the sound amplifier to prevent a switch off noise and to solve the switch-off spot.

9.6.6 Protection Events

Several protection events are controlled by the UOC:

BC protection, to protect the picture tube from a too high beam current. The UOC has the capability of measuring the normal back level current during the vertical flyback. So if for some reason the CRT circuit is malfunctioning (i.e. high beam current), the normal black current will be out of the 75 A range, and the UOC will trigger the power supply to shut down. However, this is a high beam-current situation, the TV screen will be bright white before the set is shut down.

I2C protection, to check whether all I2C ICs are functioning. In case one of these protections is activated, the set will go into 'standby'.

The 'on' and 'standby' LEDs are controlled via the UOC.

9.7 Abbreviation list

2CS	2 Carrier (or Channel) Stereo
ACI	Automatic Channel Installation: algorithm that installs TV sets directly from 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	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.
AFT	Automatic Fine Tuning	ITV	Institutional TV
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box	LATAM	Latin America
AM	Amplitude Modulation	LED	Light Emitting Diode
AP	Asia Pacific	L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
AR	Aspect Ratio: 4 by 3 or 16 by 9	LNA	Low Noise Amplifier
ATS	Automatic Tuning System	LS	Large Screen
AV	External Audio Video	LS	Loudspeaker
AVL	Automatic Volume Level	LSP	Large signal panel
BC-PROT	Beam Current Protection	M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
BCL	Beam Current Limitation	MSP	Multi standard Sound Processor: ITT sound decoder
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz	MUTE	Mute-Line
BLC-INFORMATION	Black current information	NC	Not Connected
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo soundsystem, originating from the USA and used e.g. in LATAM and AP-NTSC countries.	NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.
B-TXT	Blue teletext	NTSC	National Television Standard Committee. Color system mainly used in North America and Japan.
CBA	Circuit Board Assembly		Color carrier NTSC M/N = 3.579545 MHz, NTSC 4.43 = 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
CC	Closed Caption	NVM	Non Volatile Memory: IC containing TV related data e.g. alignments
Compare	Computer aided rePair	OB	Option Byte
CRT	Cathode Ray Tube or picture tube	OC	Open Circuit
CSM	Customer Service Mode	OSD	On Screen Display
CTI	Color Transient Improvement: manipulates steepness of chroma transients	PAL	Phase Alternating Line. Color system mainly used in West Europe (color carrier = 4.433619 MHz) and South America (color carrier PAL M = 3.575612 MHz and PAL N = 3.582056 MHz)
CVBS	Composite Video Blanking and Synchron	PCB	Printed Circuit board
DAC	Digital to Analogue Converter	PIP	Picture In Picture
DBE	Dynamic Bass Enhancement: extra low frequency amplification	PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency
DBX	Dynamic Bass Expander	POR	Power-On Reset
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz	Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
DFU	Direction For Use: description for the end user	PTP	Picture Tube Panel (or CRT-panel)
DNR	Dynamic Noise Reduction	RAM	Random Access Memory
DSP	Digital Signal Processing	RC	Remote Control handset
DST	Dealer Service Tool: special remote control designed for dealers to enter e.g. service mode	RC5	Remote Control system 5, signal from the remote control receiver
DVD	Digital Versatile Disc	RGB	Red Green Blue
EEPROM	Electrically Erasable and Programmable Read Only Memory	ROM	Read Only Memory
EHT	Extra High Tension	SAM	Service Alignment Mode
EHT-INFORMATION	Extra High Tension information	SAP	Second Audio Program
EU	Europe	SC	Sandcastle: pulse derived from sync signals
EW	East West, related to horizontal deflection of the set	S/C	Short Circuit
EXT	External (source), entering the set via SCART or Cinch	SCAVEM	Scan Velocity Modulation
FBL	Fast Blanking: DC signal accompanying RGB signals	SCL	Serial Clock
FILAMENT	Filament of CRT	SDA	Serial Data
FLASH	Flash memory	SDM	Service Default Mode
FM	Field Memory	SECAM	SEquence Couleur Avec Memoire. Color system mainly used in France and East Europe. Color carriers 4.406250 MHz and 4.250000 MHz
FM	Frequency Modulation	SIF	Sound Intermediate Frequency
HA	Horizontal Acquisition: horizontal sync pulse coming out of the HIP	SS	Small Screen
HFB	Horizontal Flyback Pulse: horizontal sync pulse from large signal deflection	STBY	Standby
HP	Headphone		
Hue	Color phase control for NTSC (not the same as 'Tint')		
I	Monochrome TV system. Sound carrier distance is 6.0 MHz		
I2C	Integrated IC bus		
IF	Intermediate Frequency		
IIC	Integrated IC bus		

SVHS	Super Video Home System
SW	Software
THD	Total Harmonic Distortion
TXT	Teletext
UP	Microprocessor
UOC	Ultimate One Chip
VA	Vertical Acquisition
VBAT	Main supply voltage for the deflection stage (mostly 141 V)
V-chip	Violence Chip
VCR	Video Cassette Recorder
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
XTAL	Quartz crystal
Y	Luminance (Y) and Chrominance (C) signal

9.8 IC Pin Description

9.8.1 ST24C08

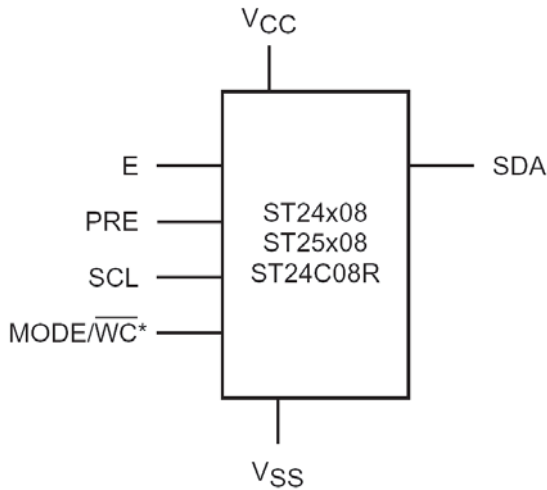


Figure 9-14 Block Diagram

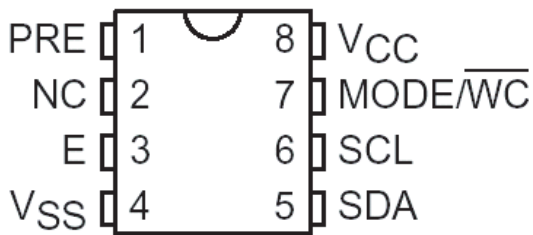


Figure 9-15 Pin Connection

Table 9-1 Signal Names

PRE	Write Protect Enable
E	Chip Enable Input
SDA	Serial Data Address Input/Output
SCL	Serial Clock
MODE	Multibyte/Page Write Mode(C version)
WC	Write Control (W version)
VCC	Supply Voltage
VSS	Ground

9.8.2 STV9302

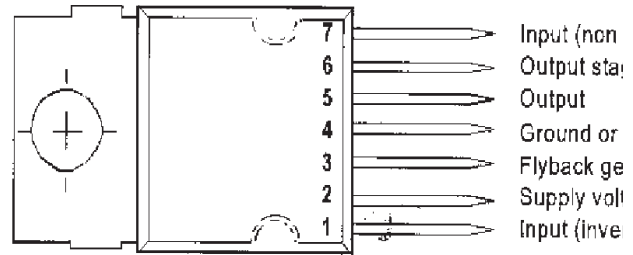


Figure 9-16 Pin Connection

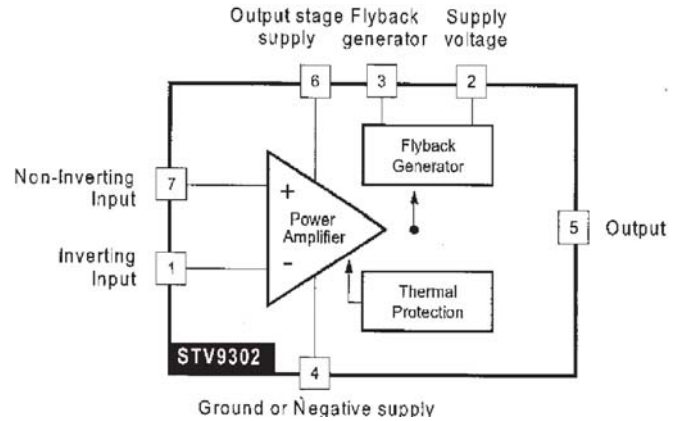


Figure 9-17 Block Diagram

9.8.3 TDA16846

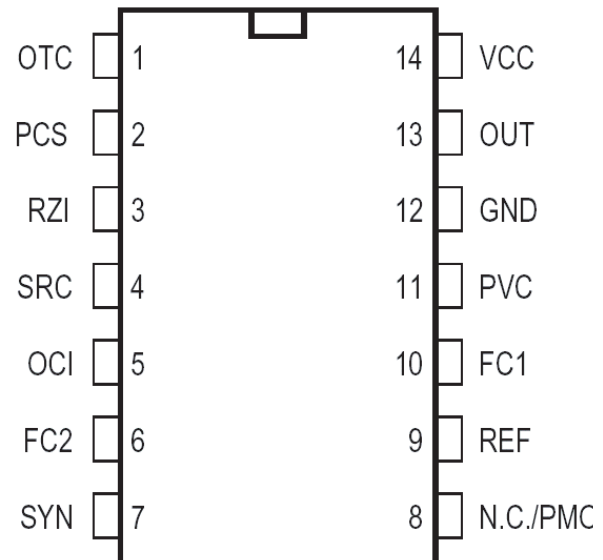


Figure 9-18 Pin Connection

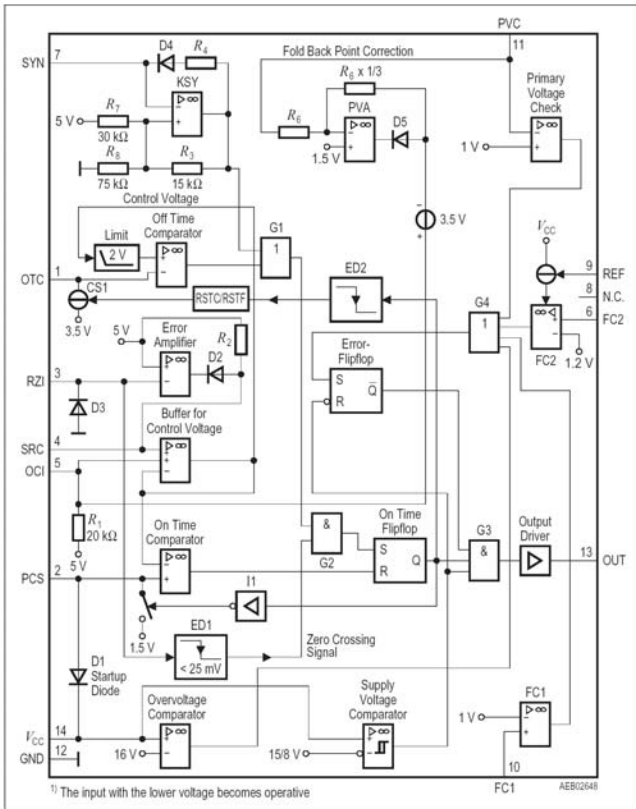


Figure 9-19 Block Diagram

Table 9-2 Pin Definition and Functions

Pin	Symbol	Function	Short Description of the Pin Functions
1	OTC	Off Time Circuit	A parallel RC-circuit between this pin and ground determines the ringing suppression time and the standby-frequency.
2	PCS	Primary Current Simulation	A capacitor between this pin and ground and a resistor between this pin and the positive terminal of the primary elcap quantifies the max. possible output power of the SMPS.
3	RZI	Regulation and Zero Crossing Input	This is the input of the error amplifier and the zero crossing input. The output of a voltage divider between the control winding and ground is connected to this input. If the pulses at pin 3 exceed a 5 V threshold, the control voltage at pin 4 is lowered.
4	SRC	Soft-Start and Regulation Capacitor	This is the pin for the control voltage. A capacitor has to be connected between this pin and ground. The value of this capacitor determines the duration of the softstart and the speed of the control.
5	OCI	Opto Coupler Input	If an opto coupler for the control is used, it's output has to be connected between this pin and ground. The voltage divider at pin 3 has then to be changed, so that the pulses at pin 3 are below 5 V.
6	FC2	Fault Comparator 2	Fault comparator 2: If a voltage > 1.2 V is applied to this pin, the SMPS stops.
7	SYN	Synchronization Input	If fixed frequency mode is wanted, a parallel RC circuit has to be connected between this pin and ground. The RC-value determines the frequency. If synchronized mode is wanted, sync pulses have to be fed into this pin.
8	N.C./ PMO	Not Connected(TDA16846)/ PMO (TDA 16847)	Not connected (TDA 16846). / This is the power measurement output of the Temporary High Power Circuit. A capacitor and a RC-circuit has to be connected between this pin and ground (TDA 16847).
9	REF	Reference Voltage and Current	Output for reference voltage (5 V). With a resistor between this pin and ground the fault comparator 2 (pin 6) is enabled.
10	FC1	Fault Comparator 1	Fault comparator 1: If a voltage > 1 V is applied to this pin, the SMPS stops.
11	PVC	Primary Voltage Check	This is the input of the primary voltage check. The voltage at the anode of the primary elcap has to be fed to this pin via a voltage divider. If the voltage of this pin falls below 1 V, the SMPS is switched off. A second function of this pin is the primary voltage dependent fold back point correction (only active in free running mode).
12	GND	Ground	Common ground.

Pin	Symbol	Function	Short Description of the Pin Functions
13	OUT	Output	Output signal. This pin has to be connected across a serial resistor with the gate of the power transistor.
14	VCC	Supply Voltage	Connection for supply voltage and startup capacitor. After startup the supply voltage is produced by the control winding of the transformer and rectified by an external diode.

9.8.4 TDA7496

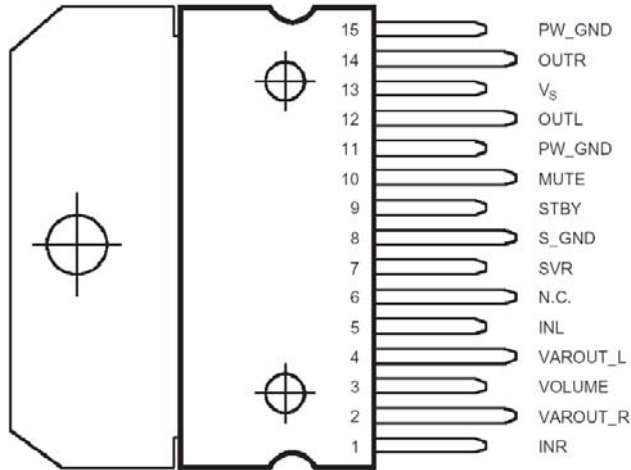


Figure 9-20 Pin Connections (Top View)

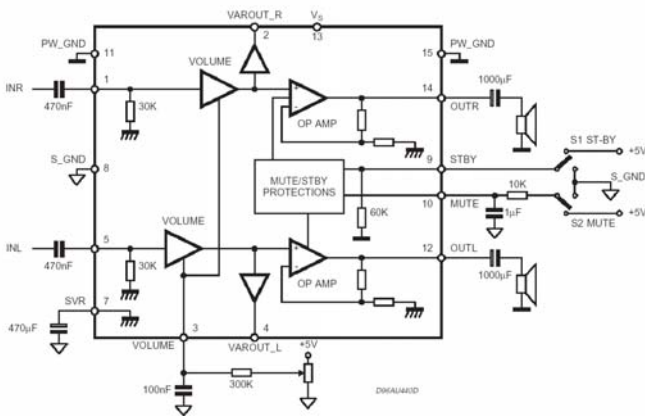


Figure 9-21 Block and Application Diagram

9.8.5 MSP3425G

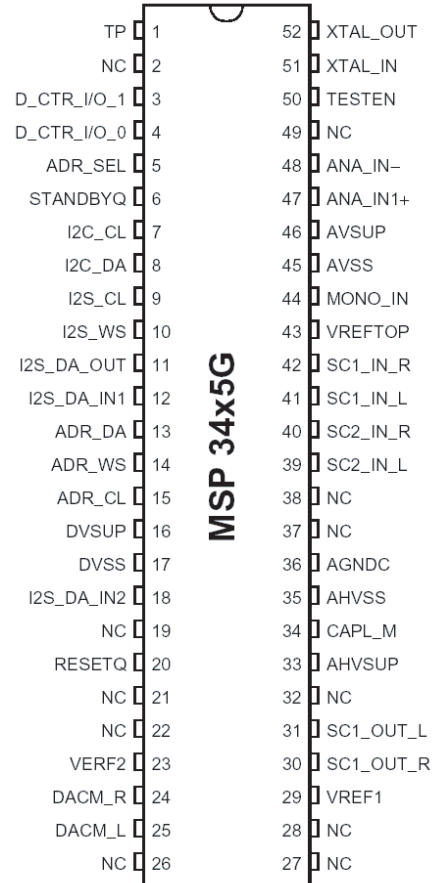


Figure 9-22 Pin Connections

Table 9-3 Pin Connenctions and Functions of MSP3425G

Pin	Symbol	Function
1	TP	Test pin
2	NC	Not connected
3	D_CTR_I/O_1	D_CTR_I/O_1
4	D_CTR_I/O_0	D_CTR_I/O_0
5	ADR_SEL	I2C Bus address select
6	STANDBYQ	Standby (low-active)
7	I2C_CL	I2C clock
8	I2C_DA	I2C data
9	I2S_CL	I2S clock
10	I2S_WS	I2S word strobe
11	I2S_DA_OUT	I2S data output
12	I2S_DA_IN1	I2S1 data input
13	ADR_DA	ADR data output
14	ADR_WS	ADR word strobe
15	ADR_CL	ADR clock
16	DVSUP	Digital power supply +5 V
17	DVSS	Digital ground
18	I2S_DA_IN2	I2S2-data input
19	NC	Not connected
20	RESETQ	Power-on-reset

Pin	Symbol	Function
21	NC	Not connected
22	NC	Not connected
23	VREF2	Reference ground 2high-voltage part
24	DACM_R	Loudspeaker out, right
25	DACM_L	Loudspeaker out, left
26	NC	Not connected
27	NC	Not connected
28	NC	Not connected
29	VREF1	Reference ground 1high-voltage part
30	SC1_OUT_R	SCART 1 output, right
31	SC1_OUT_L	SCART 1 output, left
32	NC	Not connected
33	AHVSUP	Analog power supply 8.0 V
34	CAPL_M	Volume capacitor MAIN
35	AHVSS	Analog ground
36	AGNDC	Analog reference voltagehigh-voltage part
37	NC	Not connected
38	NC	Not connected
39	SC2_IN_L	SCART 2 input, left
40	SC2_IN_R	SCART 2 input, right
41	SC1_IN_L	SCART 1 input, left
42	SC1_IN_R	SCART 1 input, right
43	VREFTOP	Reference voltage IFA/D converter
44	MONO_IN	Mono input
45	AVSS	Analog ground
46	AVSUP	Analog power supply +5 V
47	ANA_IN1+	IF input 1
48	ANA_IN-	IF common
49	NC	Not connected
50	TESTEN	Test pin
51	XTAL_IN	Crystal oscillator
52	XTAL_OUT	Crystal oscillator

9.8.6 TMPA8823

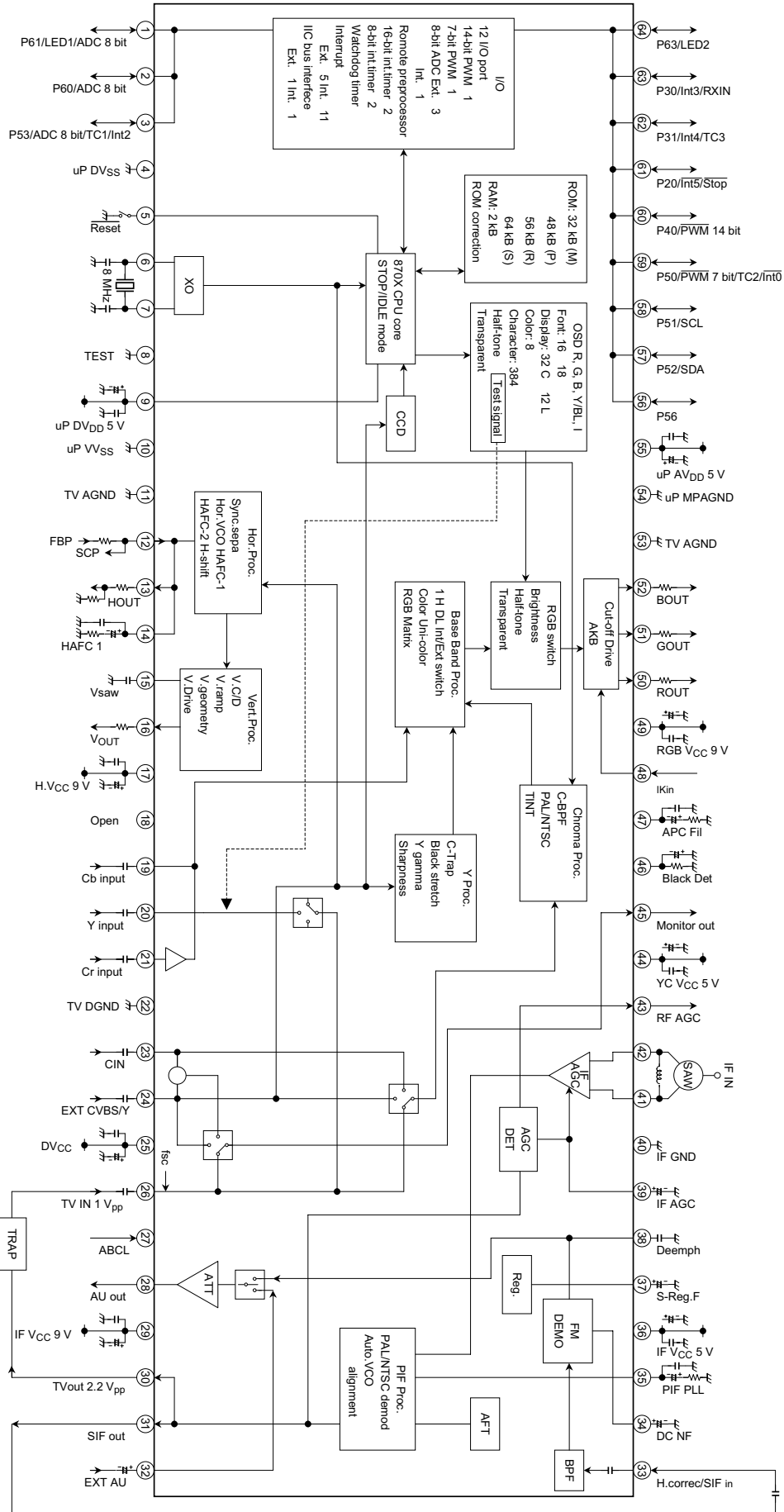


Figure 9-23 Block Diagram of TMPA8823

Pin	Symbol	Function
1	P61/LED1/ADC 8 bit	High current sink open drain output
2	P60/ADC 8 bit	A/D converter analog input
3	P53/ADC8bit/TC1/Int2	Key on wake up input
4	uP DVSS	GND
5	/Reset	Reset signal input
6	XOUT	X ^o tal connecting pins
7	XIN	X ^o tal connecting pins
8	TEST	Test pin for out-going test. Be tied to low.
9	uP DVDD 5 V	VDD Supply 5 V
10	uP VVSS	GND for Slicer circuit
11	TV AGND	GND terminal for Analog block.
12	FBP in	Input terminal for FBP
13	HOUT	Output terminal for Horizontal driving pulse.
14	HAFC 1	Terminal to be connected capacitor for HAFC filter.
15	V saw	Terminal to be connected capacitor to generate V saw signal.
16	V OUT	Output terminal Vertical driving pulse.
17	H.VCC 9 V	VCC terminal for DEF circuit. Supply 9 V.
18	-	Connect to GND via resistor
19	Cb input	Input terminal for Cb signal.
20	Y input	Input terminal for Y signal.
21	Cr input	Input terminal for Cr signal.
22	TV DGND	GND terminal for Digital block.
23	CIN	Input terminal for Chroma signal.
24	EXT CVBS/Y	EXT CVBS/Y Input terminal for Video signal.
25	TV DVCC	VCC terminal for Digital block.
26	TV IN	Input terminal for Video signal.
27	ABCL	Input terminal for ABL/ACL control.
28	AU out	Output terminal for Audio signal.
29	IF VCC 9 V	VCC terminal for IF circuit
30	TVout	Output terminal for detected PIF signal.
31	SIF out	Output terminal for detected SIF signal.
32	EXT AU in	Input terminal for Input terminal for signal.
33	H.correc/ SIF in	Input terminal for H correction and 2nd SIF.
34	DC NF	Terminal to be connected capacitor for DC Negative Feedback from SIF Det output.
35	PIF PLL	Terminal to be connected with loopfilter for PIF PLL
36	IF VCC 5 V	VCC terminal for IF
37	S-Reg.F	Terminal to be connected capacitor for stabilizing internal bias.
38	Deemph	Terminal to be connected capacitor for SIF Det De-Emphasis.
39	IF AGC	Terminal to be connected with IF AGC filter.
40	IF GND	GND terminal for IF circuit.
41	IF IN	Input terminals for IF signals.
42	IF IN	Input terminals for IF signals.
43	RF AGC	Output terminal for RF AGC control level.

Pin	Symbol	Function
44	YC VCC 5 V	VCC terminal for Y/C circuit. Supply 5V.
45	Monitor out	Output terminal for CVBS or Y signal selected by BUS
46	Black Det	Terminal to be connected with Black Det filter for black stretch.
47	APC Fil	Terminal to be connected with APC filter for Chroma demodulation.
48	IKin	Input terminal to sense AKB cathode current.
49	RGB VCC 9 V	VCC terminal for RGB circuit.
50	ROUT	Output terminal for R signal.
51	GOUT	Output terminal for G signal.
52	BOUT	Output terminal for B signal.
53	TV AGND	GND terminal for Analog block.
54	Up MPAGND	GND for Oscillator circuit
55	uP AVDD 5 V	VDD for OSD Oscillator circuit Supply 5 V
56	P56	-
57	P52/SDA	IIC bus serial data input/output
58	P51/SCL	IIC bus serial clock input/output
59	P50/PWM7 bit/TC2/Int0	External interrupt input
60	P40/PWM14bit	14/12-bit D/A conversion (PWM) output
61	P20/Int5/Stop	External interrupt input
62	P31/Int4/TC3	External interrupt input
63	P30/Int3/RXIN	External interrupt input
64	P63/LED2/	High current sink open drain output

10. Spareparts List

Not applicable.

