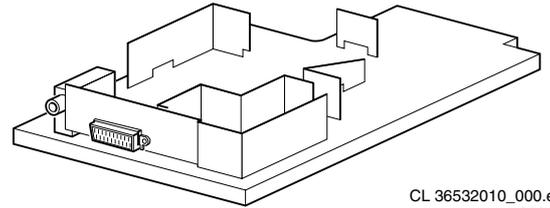


Service  
Service  
**Service**



CL 36532010\_000.eps  
200203

# Service Manual

<b>Contents</b>	<b>Page</b>
1. Technical Specifications, Connections and Chassis Overview	2
2. Safety & Maintenance Instructions, Warnings and Notes	3
3. Directions for Use	5
4. Mechanical Instructions	7
5. Service Modes, Error Codes and Faultfinding	8
6. <i>Block Diagram, I2C Diagram and Supply Voltage Diagram</i>	
Block Diagram	9
I <sup>2</sup> C Diagram	10
Supply Voltage Diagram	11
7. <i>Electrical Diagrams and PWB's</i>	<i>Diagram CBA</i>
Main Panel: $\mu$ Controller and Video Processor	(Diagram A1) 12      16-17
Main Panel: Front AV	(Diagram A2) 12      16-17
Main Panel: SCARTS	(Diagram A3) 13      16-17
Main Panel: Power Supply	(Diagram A4) 13      16-17
Main Panel: Vertical	(Diagram A5) 14      16-17
Main Panel: Horizontal	(Diagram A6) 14      16-17
Main Panel: Tuner	(Diagram A7) 14      16-17
Main Panel: Headphone	(Diagram A8) 14      16-17
Main Panel: EEPROM	(Diagram A9) 15      16-17
Main Panel: Reset	(Diagram A10) 15      16-17
Main Panel: Infrared, LED and KB	(Diagram A11) 15      16-17
Main Panel: Mono Audio Amplifier	(Diagram A12) 15      16-17
Main Panel: SECAM L/L' Mono	(Diagram A13) 15      16-17
CRT Board	(Diagram B) 18      18
8. Alignments	19
9. Circuit Description (Not Applicable)	22
Abbreviation List	22
IC Data Sheets	23
10 Spare Parts List	44

© Copyright 2003 Philips Consumer Electronics B.V. Eindhoven, The Netherlands.  
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.



# 1. Technical Specifications, Connection Facilities and Chassis Overview

## 1.1 Technical Specifications

### 1.1.1 Reception

Tuning system	: PLL
Colour systems	: PAL
	: SECAM
Sound system	: Mono
A/V Connections	: Scart
	: Headphone front
Channel selection	: Air
	: Cable
IF Frequency	: B/G, D/K, L: 38.9 MHz
	: L': 33.4 MHz
	: I: 39.5 MHz
Aerial input	: 75 Ohm

### 1.1.2 Miscellaneous

Audio Output (RMS)	: 1 x 1 W
Mains Voltage	: 150/240 V (± 10 %)
Mains Frequency	: 50 Hz (± 5 %)
Power Consumption	: 45 W
Standby Power Consumption	: 4 W

## 1.2 Connection/Control Facilities

### 1.2.1 TV Front Control

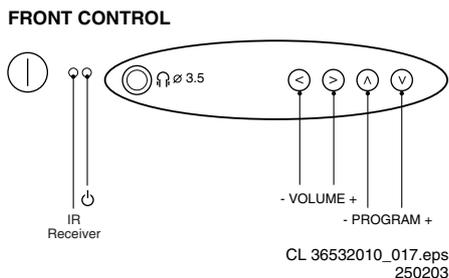


Figure 1-1 Front control

### 1.2.2 TV Rear Connections

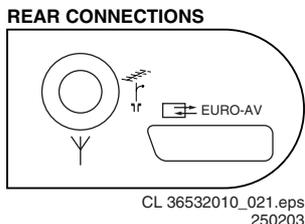


Figure 1-2 Rear connections

### Euro AV

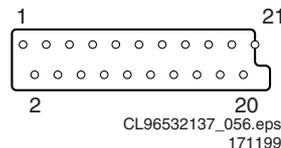


Figure 1-3 SCART connector

1 - Audio - R	0.5 Vrms / 1 kOhm	⊖→
2 - Audio - R	0.5 Vrms / 10 kOhm	⊖→
3 - Audio - L	0.5 Vrms / 1 kOhm	⊖→
4 - Audio	Ground	⊖
5 - Blue	Ground	⊖
6 - Audio - L	0.5 Vrms / 10 kOhm	⊖→
7 - Blue	0.7 Vpp / 75 Ohm	⊖→
8 - CVBS-status	0 - 1.3 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	
9 - Green	Ground	⊖
10 -		
11 - Green	0.7 Vpp / 75 Ohm	⊖→
12 -		
13 - Red	Ground	⊖
14 - CVBS status	Ground	⊖
15 - Red	0.7 Vpp / 75 Ohm	⊖→
16 - RGB status	0 - 0.4 V: INT 1 - 3 V: EXT / 75 Ohm	
17 - CVBS	Ground	⊖
18 - RGB status	Ground	⊖
19 - CVBS-out	1 Vpp / 75 Ohm	⊖→
20 - CVBS-in	1 Vpp / 75 Ohm	⊖→
21 - Shielding	Ground	⊖

## 1.3 Chassis Overview

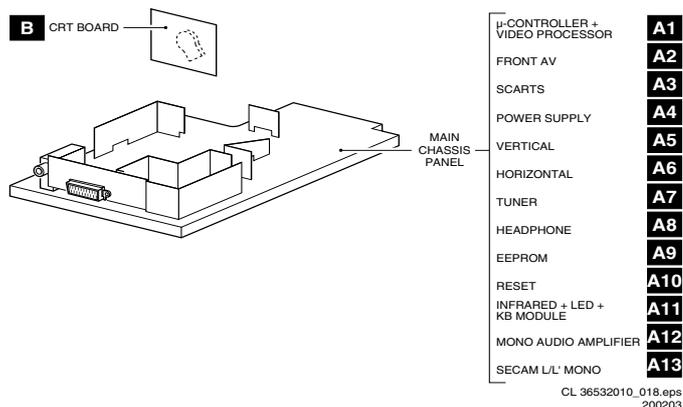


Figure 1-4 PWB location

## 2. Safety & Maintenance Instructions, Warnings, and Notes

Index of this chapter:

1. Safety Instructions for Repairs
2. Maintenance Instructions
3. Warnings
4. Notes

### 2.1 Safety Instructions for Repairs

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 resolder 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 resoldering 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 sinks.
- 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 4.5 MOhm and 12 MOhm.
  4. Switch the TV 'off' and remove the wire between the two pins of the AC plug.
- Check the cabinet for defects, to prevent the possibility of the customer touching any internal parts.

### 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

- 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).

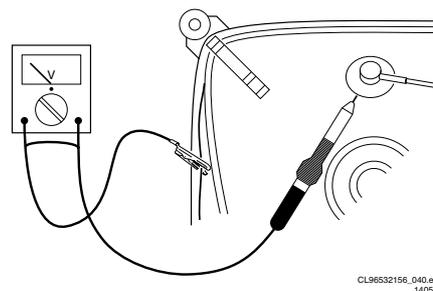


Figure 2-1 Discharge picture tube

- 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.

### 2.4 Notes

#### 2.4.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground ( $\perp$ ), or hot ground ( $\downarrow$ ), 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 "Service Modes, Error Codes, and Faultfinding" section) with a color bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 61.25 MHz (NTSC, channel 3).
- Where necessary, measure the waveforms and voltages with ( $\Gamma$ ) and without ( $\text{X}$ ) aerial signal. Measure the voltages in the power supply section both in normal operation ( $\text{I}$ ) and in standby ( $\text{II}$ ). 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.

#### 2.4.2 Schematic Notes

- All Resistor values are in ohms and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kOhm).
- Resistor values with no multiplier may be indicated with either an 'E' or an 'R' (e.g. 220E or 220R indicates 220 Ohm).
- All Capacitor values are expressed in Micro-Farads ( $\mu = \times 10^{-6}$ ), Nano-Farads ( $n = \times 10^{-9}$ ), or Pico-Farads ( $p = \times 10^{-12}$ ).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An 'asterisk' (\*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed in the Electrical Replacement Parts List. Therefore, always check this list when there is any doubt.

#### 2.4.3 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages.** While some may not be dangerous in themselves, they can cause unexpected reactions - reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.
- **Before powering up the TV set with the back cover off** (or on a test fixture), attach a clip lead to the CRT DAG ground and to a screwdriver blade that has a well insulated handle. After the TV is powered on and high voltage has developed, probe the anode lead with the blade, starting at the case of the High Voltage Transformer (flyback - IFT). Move the blade to within two inches of the connector of the CRT. **If there is an arc, you found it the easy way, without getting a shock!** If there is an arc to the screwdriver blade, replace the part which is causing the problem; the High Voltage Transformer or the lead (if it is removable).

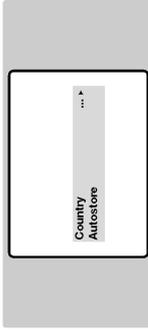
# 3. Directions for Use

## Installing your television set

-  Insert the aerial plug into the "T" socket at the rear of the set.
-  Insert the mains plug into a wall socket (220-240 V / 50 Hz).
-  Insert the two R6-type batteries (supplied) making sure that they are the right way round.
-  To switch on the set, press the on/off key. If the television remains in standby mode, press **P** on the remote control.

## Quick installation

When you turn on the TV set for the first time, a menu is displayed on screen. This menu prompts you to select the country.



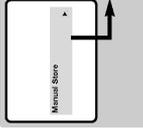
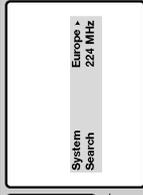
If the menu is not displayed, press and hold down the **▲** and **▶** keys on the TV set for 5 seconds to display the menu.

- Use the **◀** **▶** keys on the remote control to select your country and validate with **↵**.

## Plug & Play

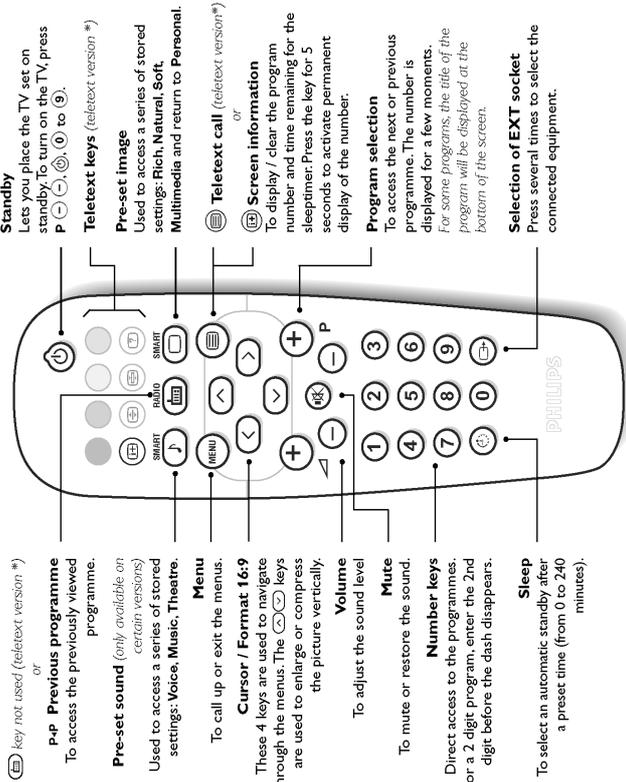
- If your country does not appear in the list, select choice "...".
- The search starts automatically. All the available TV programmes will be stored. This operation takes a few minutes. The display shows the progress of the search and the number of programs found. At the end of the search, the menu disappears.  
*To exit or interrupt the search, press **⏻**. If no programme is found, see tips chapter at the end of the instruction for use.*
  - The programmes found are arranged by number 99, 98, 97, ... etc. You may now remember these programmes as you wish. See Program sort below.

## Program sort

- Press key **⏻**. The Main menu is displayed on the screen.
-  With the **◀** key, select **Manual Store** and press **↵**.
-  Press key **⏻**. The Main menu is displayed on the screen.
- Use the **◀** key to select **Program No** and enter the new number with the **◀** **▶** keys.
- With the **◀** key, select **Store** and press **↵**.
- Repeat steps **3** to **5** for each program you wish to remember.
- To quit the menu, press **⏻**.

## Remote control keys

\* Depending on the model, there are 2 different versions of the remote control.



**Standby**  
Lets you place the TV set on standby. To turn on the TV, press **P** **◀** **▶** **⏻** **⏹** to **⏻**.

**Teletext keys** (teletext version \*)  
**Pre-set image**  
Used to access a series of stored settings: Rich, Natural, Soft, Multimedia and return to Personal.

**Teletext call** (teletext version\*)  
or  
**Screen information**  
To display / clear the program number and time remaining for the sleeper: Press the key for 5 seconds to activate permanent display of the number.

**Program selection**  
To access the next or previous programme. The number is displayed for a few moments. For some programs, the title of the program will be displayed at the bottom of the screen.

**Selection of EXT socket**  
Press several times to select the connected equipment.

**key not used** (teletext version \*)

**P-P Previous programme**  
To access the previously viewed programme.

**Pre-set sound** (only available on certain versions)  
Used to access a series of stored settings: Voice, Music, Theatre.

**Menu**  
To call up or exit the menu.

**Cursor / Format 16:9**  
These 4 keys are used to navigate through the menu. The **◀** **▶** keys are used to enlarge or compress the picture vertically.

**Volume**  
To adjust the sound level

**Mute**  
To mute or restore the sound.

**Number keys**  
Direct access to the programmes. For a 2 digit program, enter the 2nd digit before the dash disappears.

**Sleep**  
To select an automatic standby after a preset time (from 0 to 240 minutes).

## Teletext

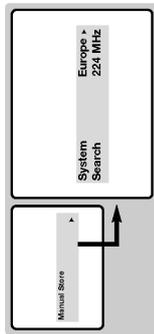
(only available on certain versions)

- Teletext call**  
Press the **⏻** key to call teletext, change to transparent mode and then exit. The summary appears with a list of items that can be accessed.  
*If the channel selected does not broadcast teletext, the screen remain black.*
- Direct access to the items**  
Coloured areas are displayed at the bottom of the screen. The 4 coloured keys are used to access the items or corresponding pages.
- Contents**  
Press **⏻** to return to the contents page (usually page 100).
- Enlarge a page**  
Press **⏻** several times to enlarge the page.
- Stop sub-page acquisition**  
Certain pages contain sub-pages which follow on automatically. Press **⏻** to stop / resume the sequence.
- Hidden information** (games solutions)  
Press **⏻** to display or hide the concealed information.

## Manual store

This menu is used to store the programmes one at a time.

- 1 Press the **Menu** key.
- 2 With the **Left** key, select **Manual Store** and press **Enter**. Use the **Up** and **Down** keys to select a setting and the **Left** and **Right** keys to adjust. :



- 3 **System:** select Europe (automatic detection<sup>\*)</sup> or West Europe (BG standard), East Europe (DK standard), UK (I standard) or France (LL<sup>\*)</sup>

standard).

<sup>\*</sup> Except for France (LL standard), you must select choice **France**.

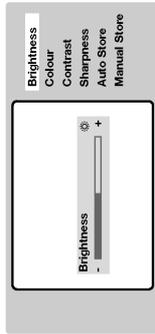
- 4 **Search:** press **Enter**. The search starts. Once a programme is found, the scanning stops. Go to the next step. If you know the frequency of the required programme, this can be entered directly using the **0** to **9** keys.

If no programme is found, see **Tips** chapter at the end of the instruction for use.

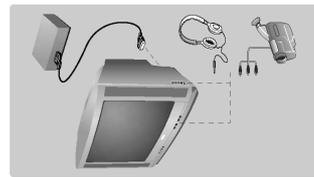
- 5 **Program No.:** enter the required number with the **Left** or **Right** keys.
- 6 **Store:** press **Enter**. The program is stored.
- 7 Repeat steps 4 to 6 for each programme to store.
- 8 To quit the menu, press **Menu**.

## Other settings in the menu

- 1 Press the **Menu** key.
- 2 Use the **Left** and **Right** keys to select a setting and the **Up** and **Down** keys to adjust. :



## Other functions



### Connecting peripheral equipment

Use the euroconnector socket located at the back of the set or the front-**AV** connections (when available).

To select connected equipment, press several times the **Source** key.

Most equipment (decoder, VCR) carries out the switching itself.

### Headphones socket (only available on certain versions)

When headphones are connected, the sound on the TV set will be cut.

The **Volume** and **Power** keys are used to adjust the volume level.

The headphones impedance must be between 32 and 600 Ohms.

### The keys on the TV set

The TV set has 4 keys: **VOLUME +** ( **+** ) and **PROGRAM -** ( **-** ) **P +**.

To access or exit the menus, press simultaneously the **Left** and **Right** keys. Then use the **P +** and **-** keys to select and adjust.

**Tips :** see at the end of the booklet (p. 57).

## Tips

### Positioning the television set

Place your TV on a solid, stable surface, leaving a space of at least 5 cm around the appliance. To avoid accidents, do not put anything on the set such as a cloth or cover, a container full of liquid (vase) or a heat source (lamp). The set must not be exposed to water.

### Poor reception

The proximity of mountains or high buildings may be responsible for ghost pictures, echoing or shadows. In this case, modify the orientation of the aerial.

### No picture or no sound

Have you connected the aerial socket properly?

Have you chosen the right system? (p. 5).

### Teletext

Are certain characters not displayed correctly? Press and hold down the **Left** and **Right** keys on the TV set for 5 seconds to display the **Country** menu. Then use the

## GB

### Standby

If the set receives no signal for 15 mins, it automatically goes into standby mode. To save power, your set is fitted with components that give it a very low power consumption when in standby mode (less than 3 W).

### Still no results?

If your TV set breaks down, never attempt to repair it yourself; contact your dealer's after-sales service.

### Recycling directive

The batteries supplied with this appliance do not contain mercury or nickel cadmium. The materials used in your set are either reusable or can be recycled. To minimise environmental waste, specialist companies collect used appliances and dismantle them after retrieving any materials that can be used again (ask your dealer for further details).

## 4. Mechanical Instructions

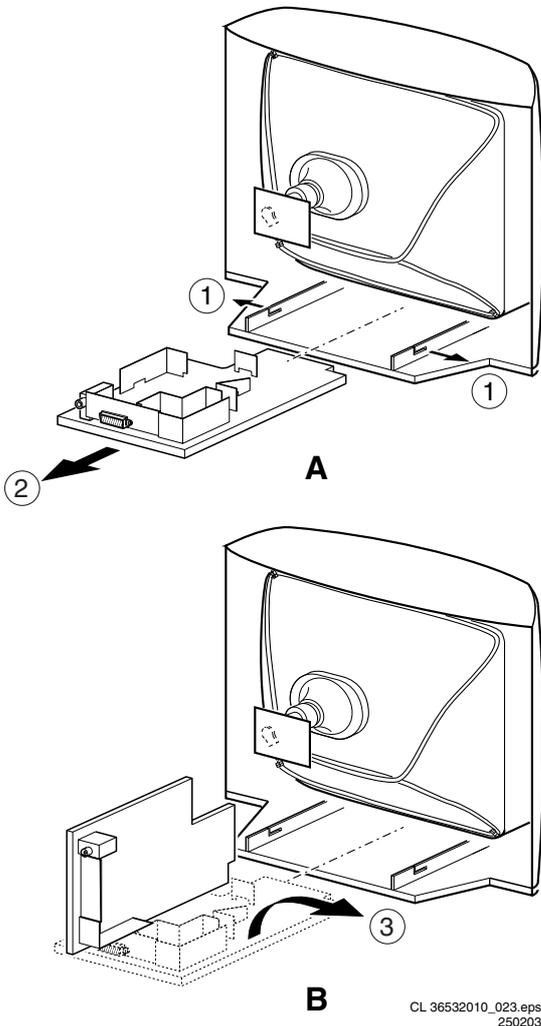
**Note:** Figures below can deviate slightly from the actual situation, due to the different set executions.

### 4.1 Rear Cover Removal

1. Remove all (ten) fixation screws of the rear cover: two at the top, two at each side, three at the bottom and one in the middle of the rear cover. The 14" set has only four fixation screws: two at the top and two at the bottom.
2. Now pull the rear cover backward to remove it.

### 4.2 Service Position Main Panel

1. Disconnect the strain relief of the Mains cord.
2. Remove the main panel, by pushing the two centre clips outward [1]. At the same time pull the panel away from the CRT [2].
3. Disconnect the degaussing coil by removing the cable from connector KP02.
4. Move the panel somewhat to the left and flip it 90 degrees [3], with the components towards the CRT.



CL 36532010\_023.eps  
250203

Figure 4-1 Service Position

### 4.3 Rear Cover Mounting

Before you mount the rear cover:

1. Place the mains cord correctly in its guiding brackets (strain relief).
2. Place all cables in their original position.

## 5. Service Modes, Error Codes and Fault Finding

### Index of this chapter

1. Service Modes
2. Dealer Mode
3. Fault Finding

### 5.1 Service Modes

The Service Mode offers features, which the service technician can use to repair a set.

Any feature change, made via the Service Menu, will respond at the same time (for example; if Hotel Mode is enabled, the volume cannot be increased above max. volume displayed at the Service Menu).

All displayed text strings in the Service Modes are in English.

#### 5.1.1 TV Service Mode

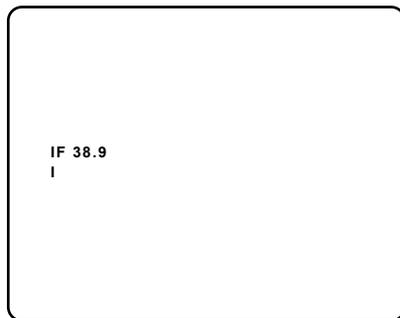
##### **Purpose**

- To perform alignments (e.g. colour adjustment and geometry alignments)
- To change option settings
- Hotel Mode operations

##### **How to enter the Service Mode**

Screen menu's must be 'off', when you enter the Service Mode. Use a standard customer RC-transmitter and key in the code **062596** directly followed by the **OSD** button.

The following screen is visible when you enter the Service Mode:



CL 36532010\_019.eps  
200203

**Figure 5-1 TV Service Mode menu**

##### **How to navigate**

- Select menu items with the CURSOR UP/DOWN keys.
- With the CURSOR LEFT/RIGHT keys, it is possible to change the value of the menu items

##### **How to exit**

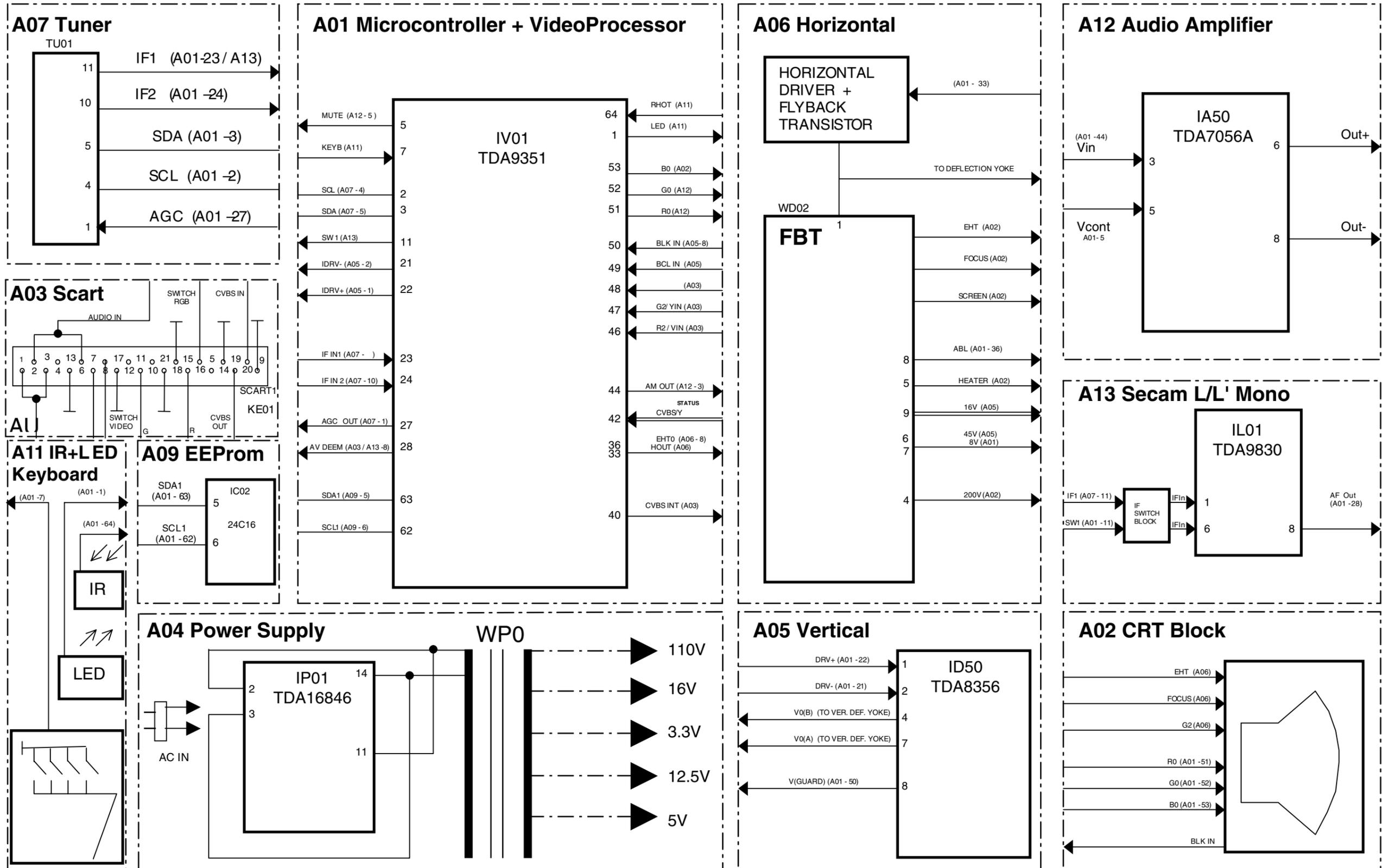
- With the STANDBY command, the set switches to Standby.
- With the MENU key.

Switching the set 'off' and 'on' with the mains switch, brings the set into normal operation again.

All changes in the Service Mode are stored immediately.

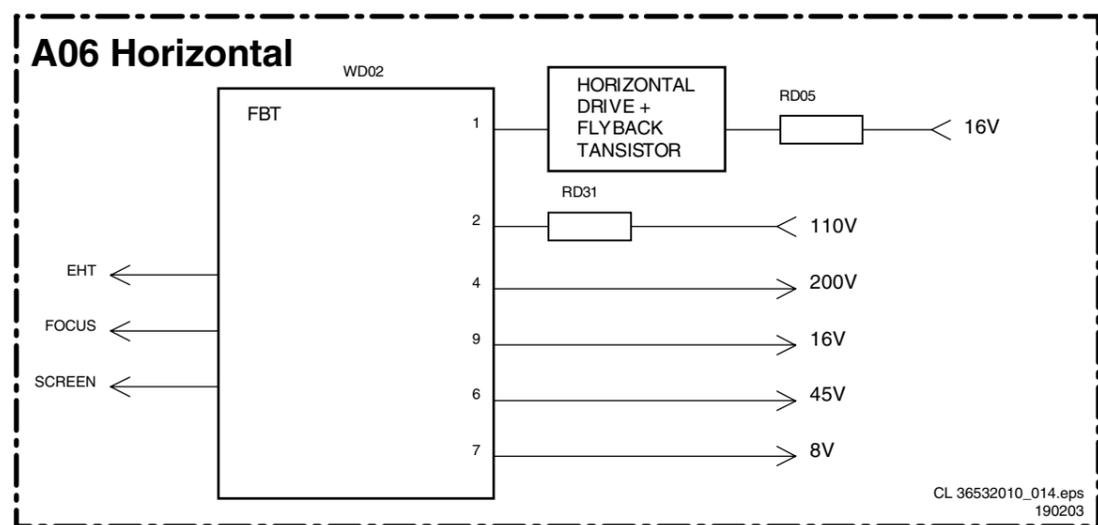
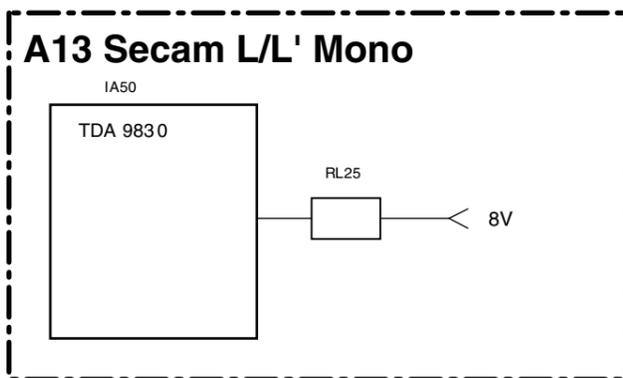
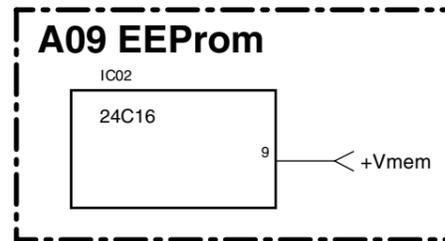
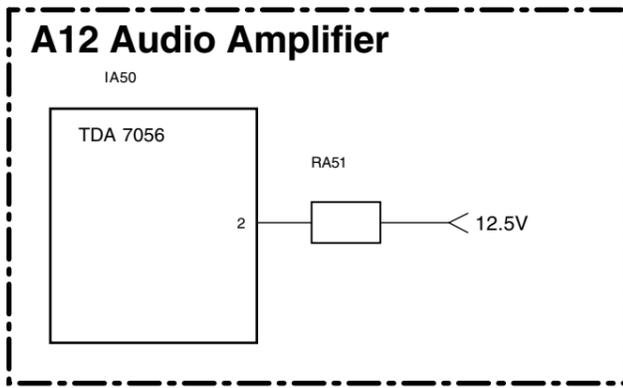
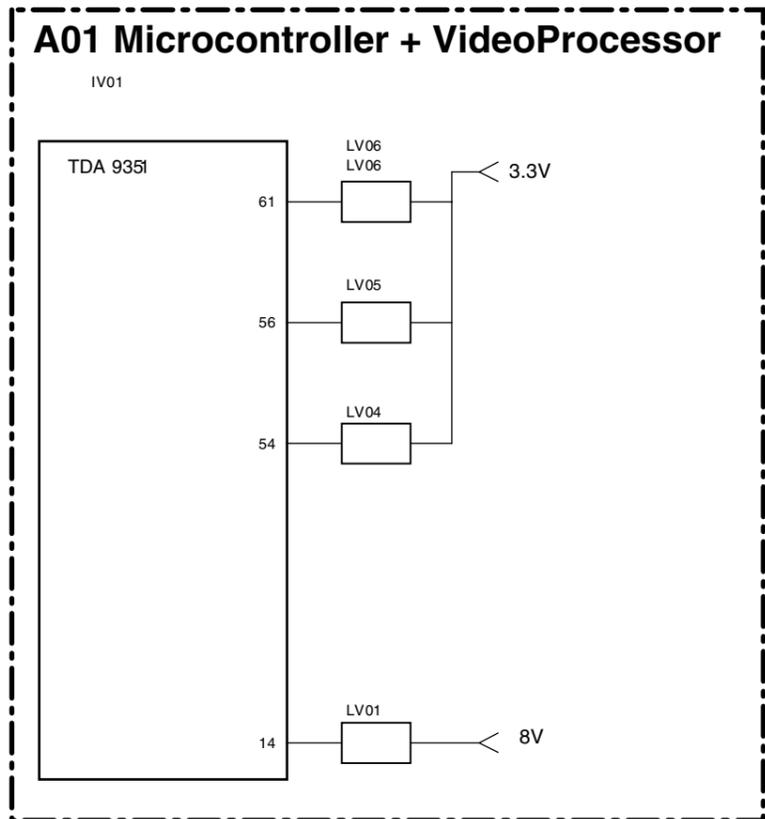
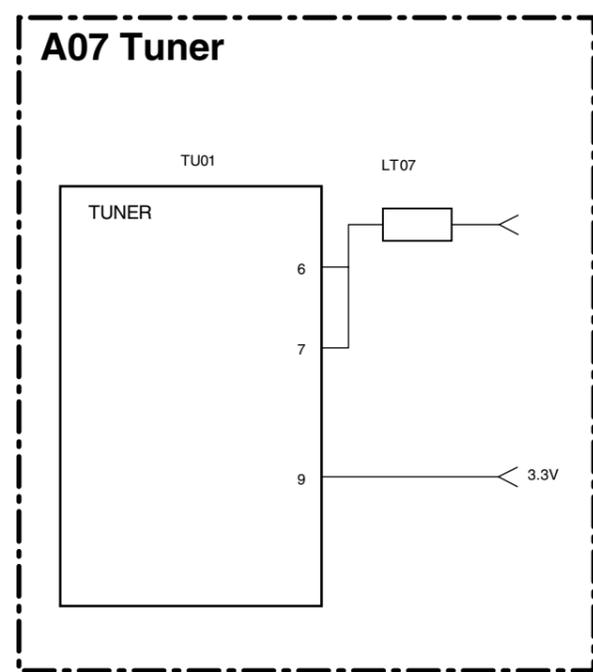
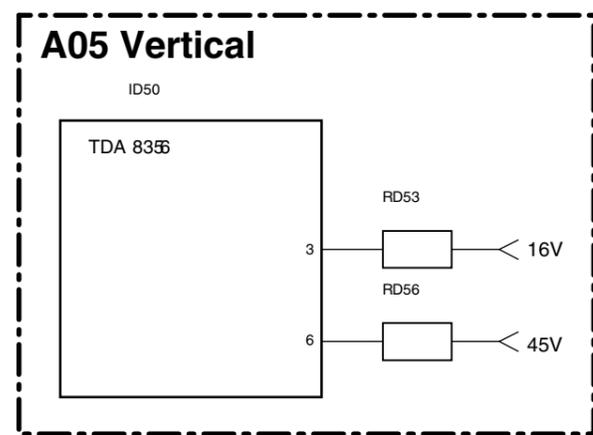
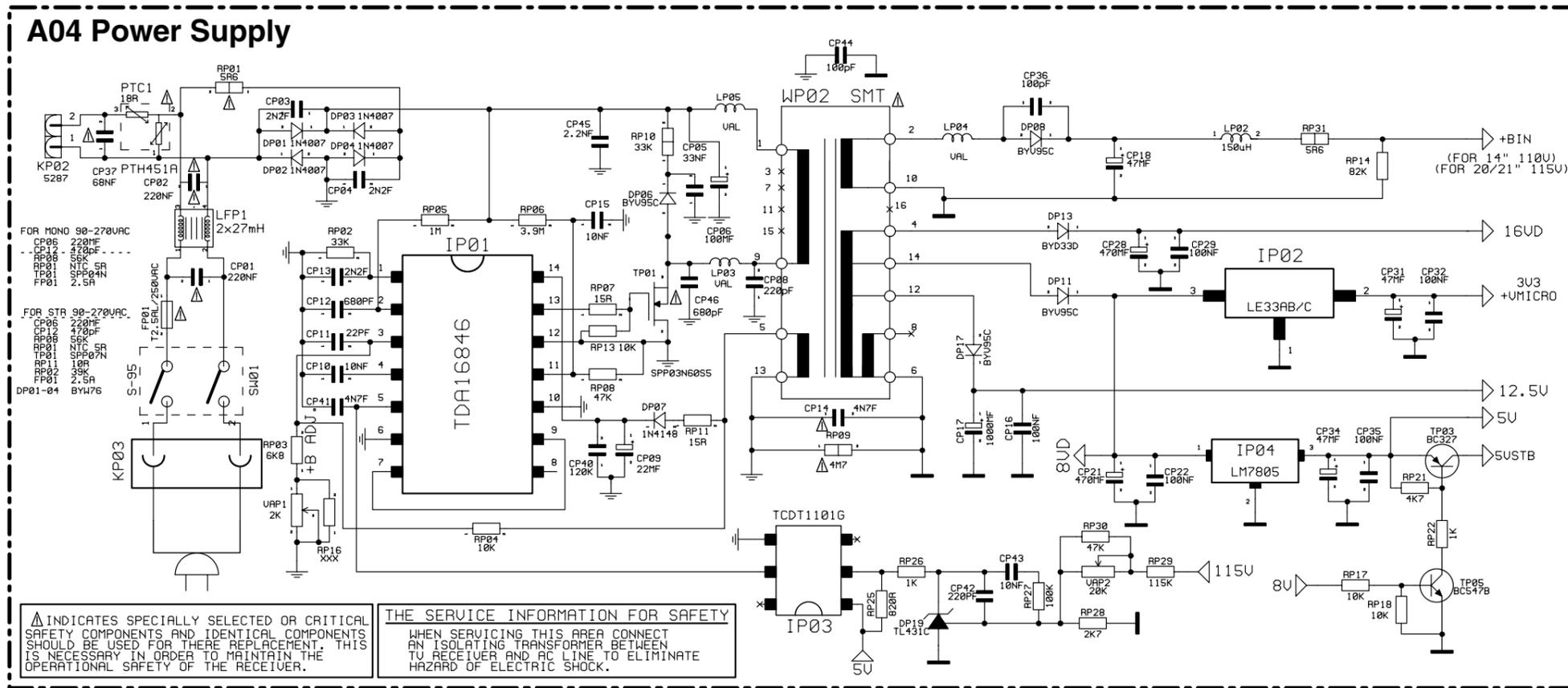
## 6. Wiring Diagram, Block Diagrams and Overviews

### Block Diagram



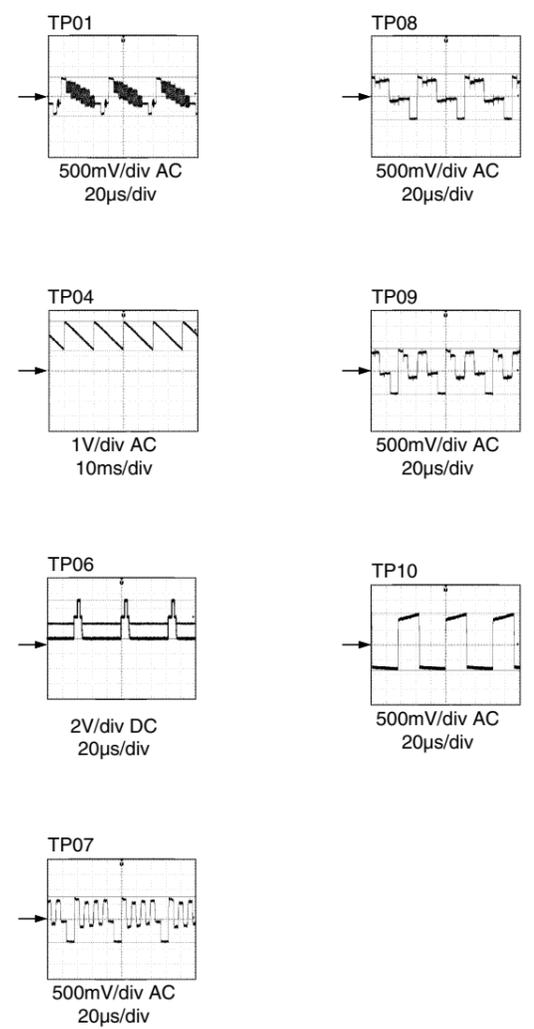
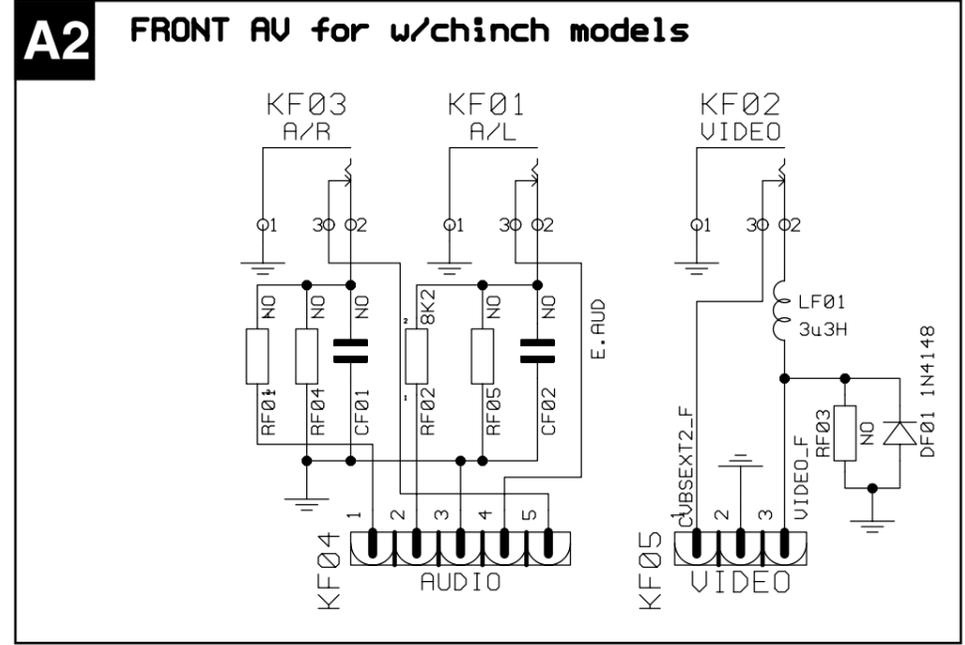
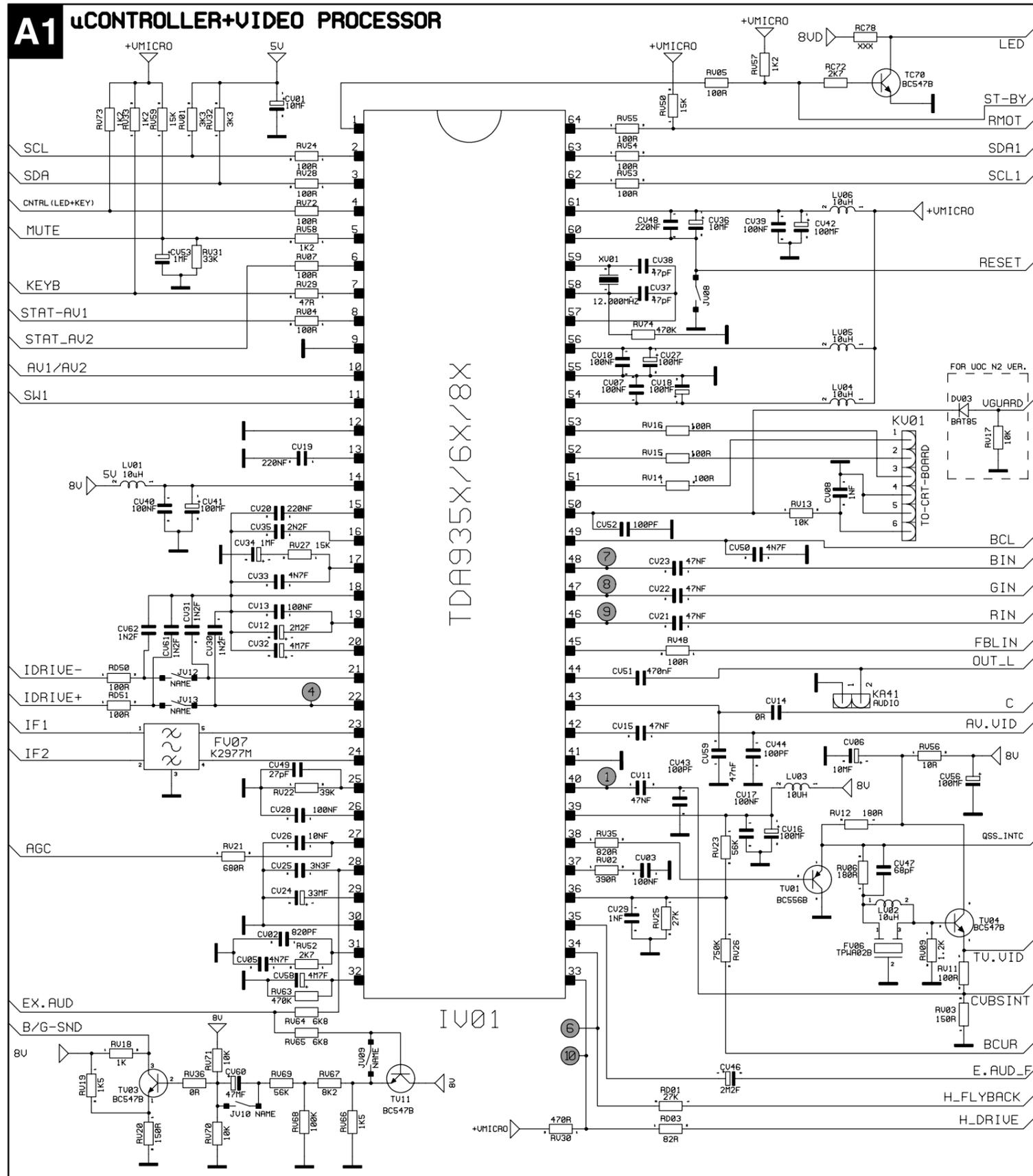


Supply Voltage Diagram



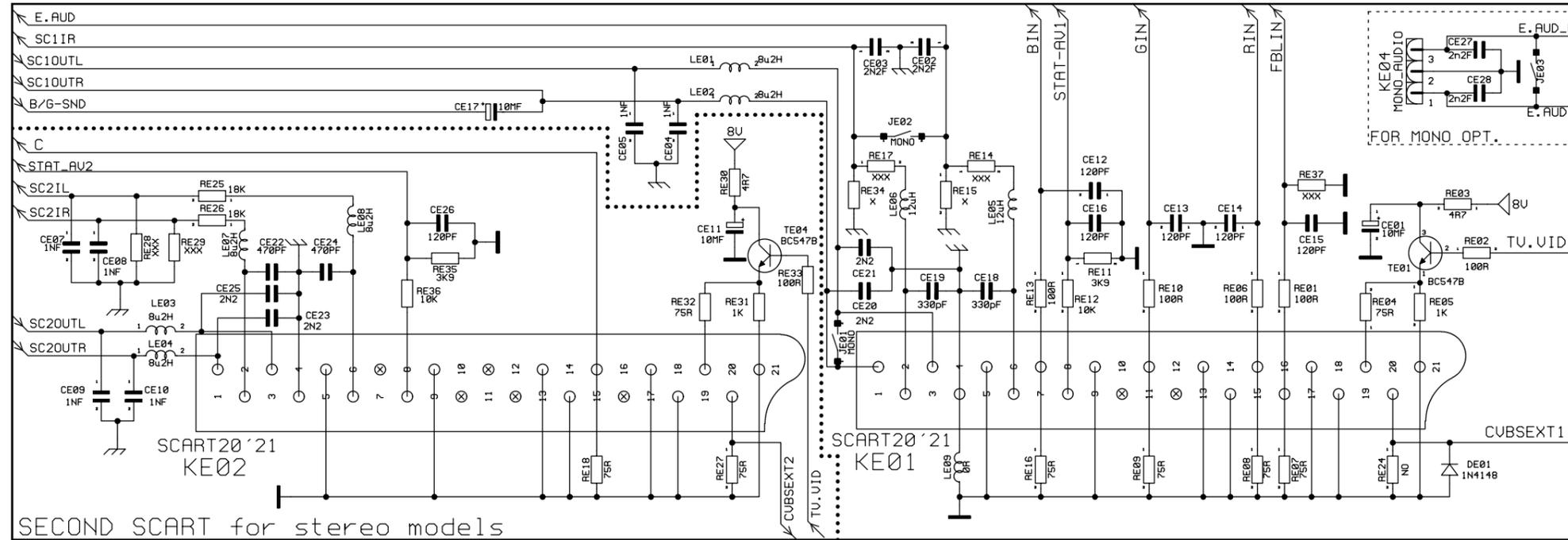
# 7. Circuit Diagrams and PWB Layouts

## Main Panel: uController + Video Processor and Front AV

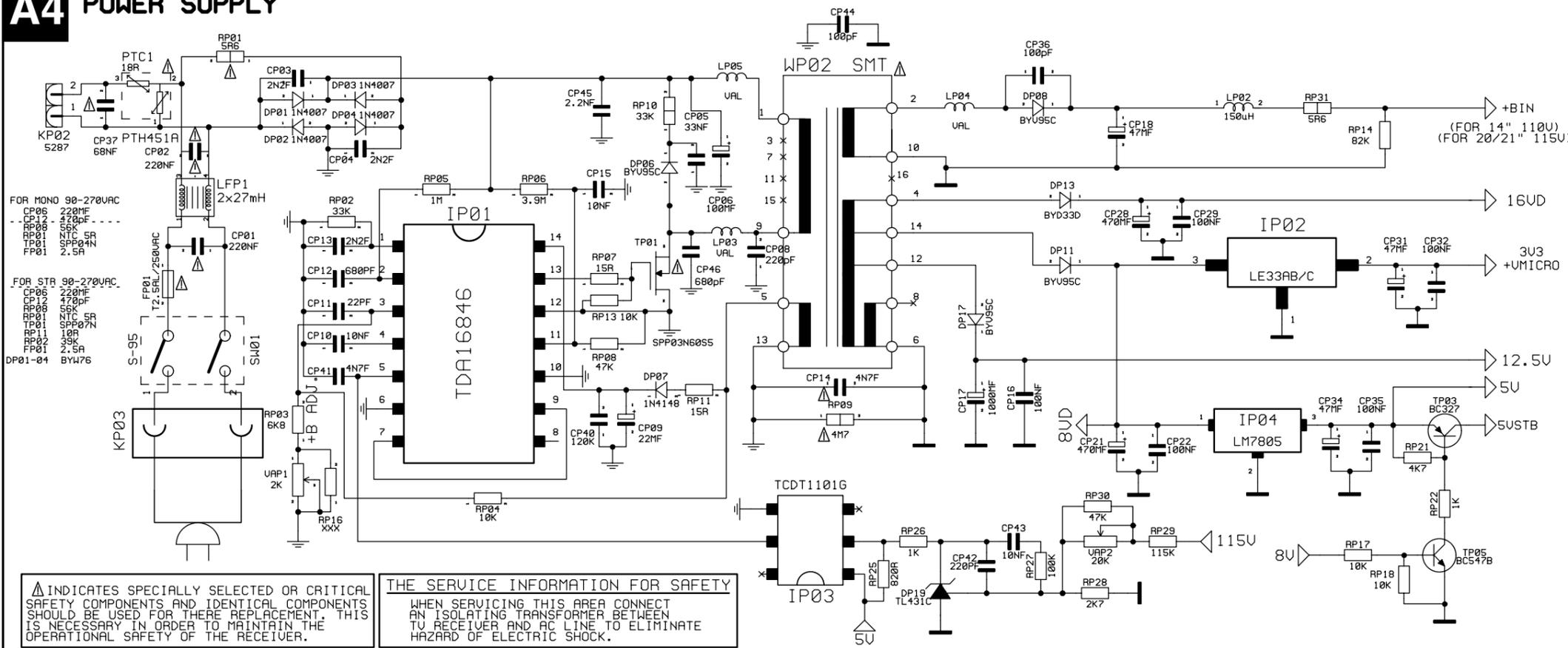


Main Panel: SCARTS and Power Supply

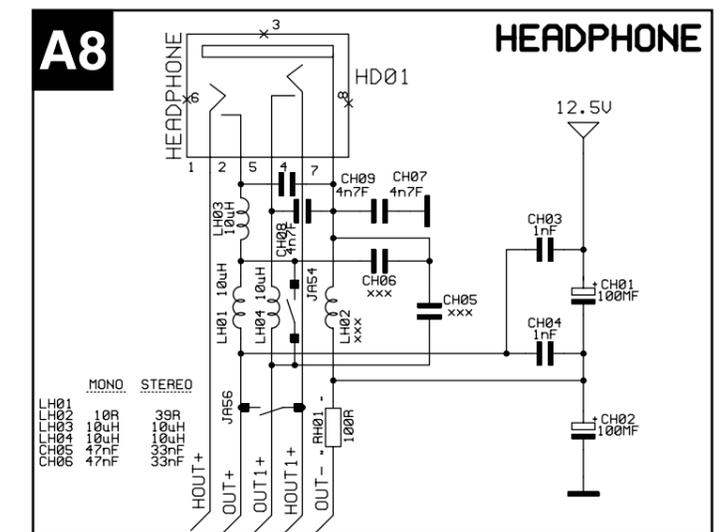
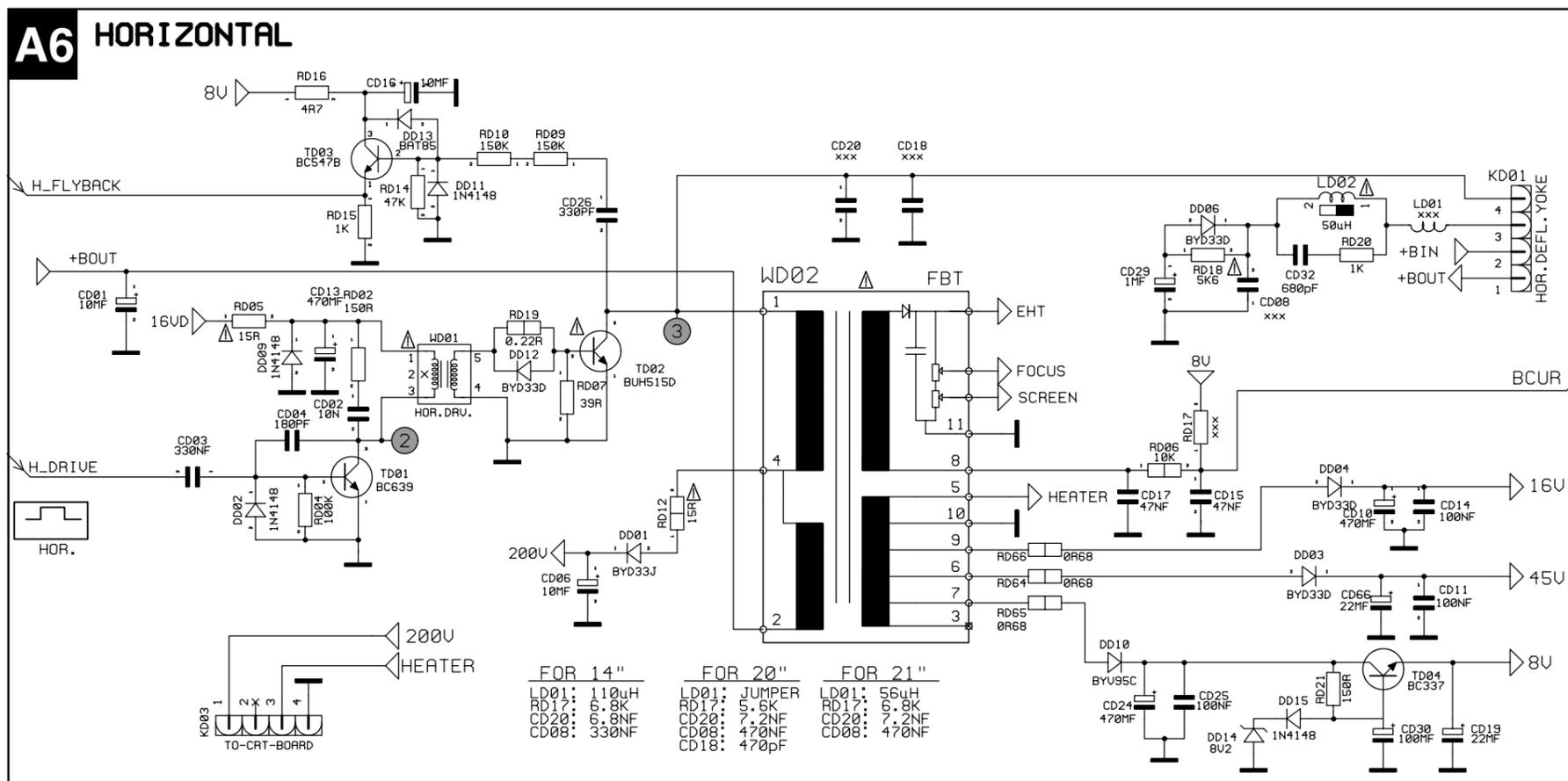
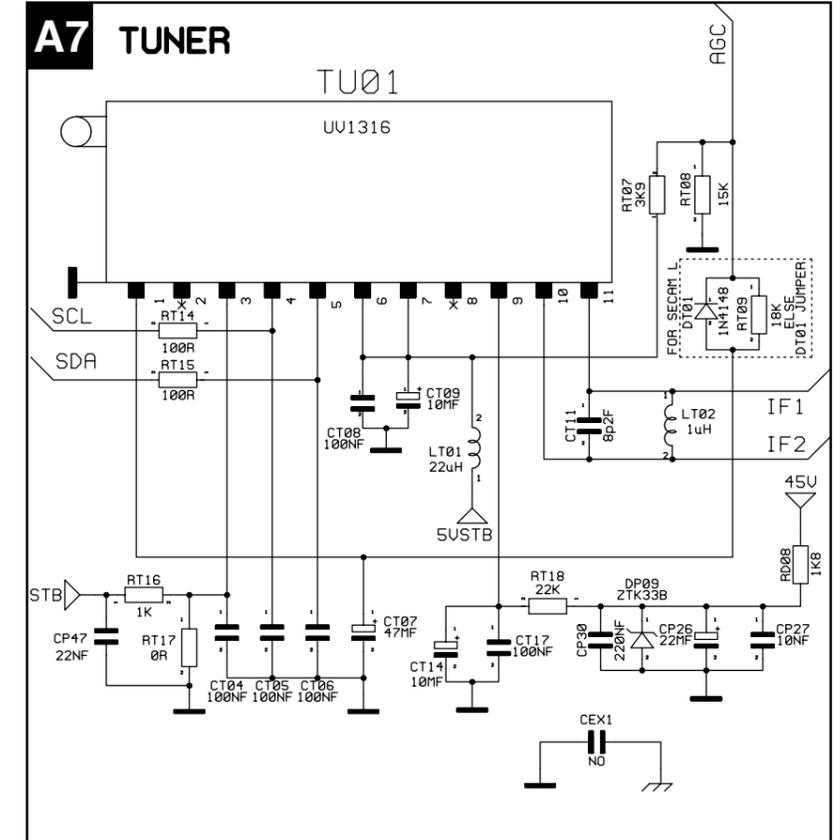
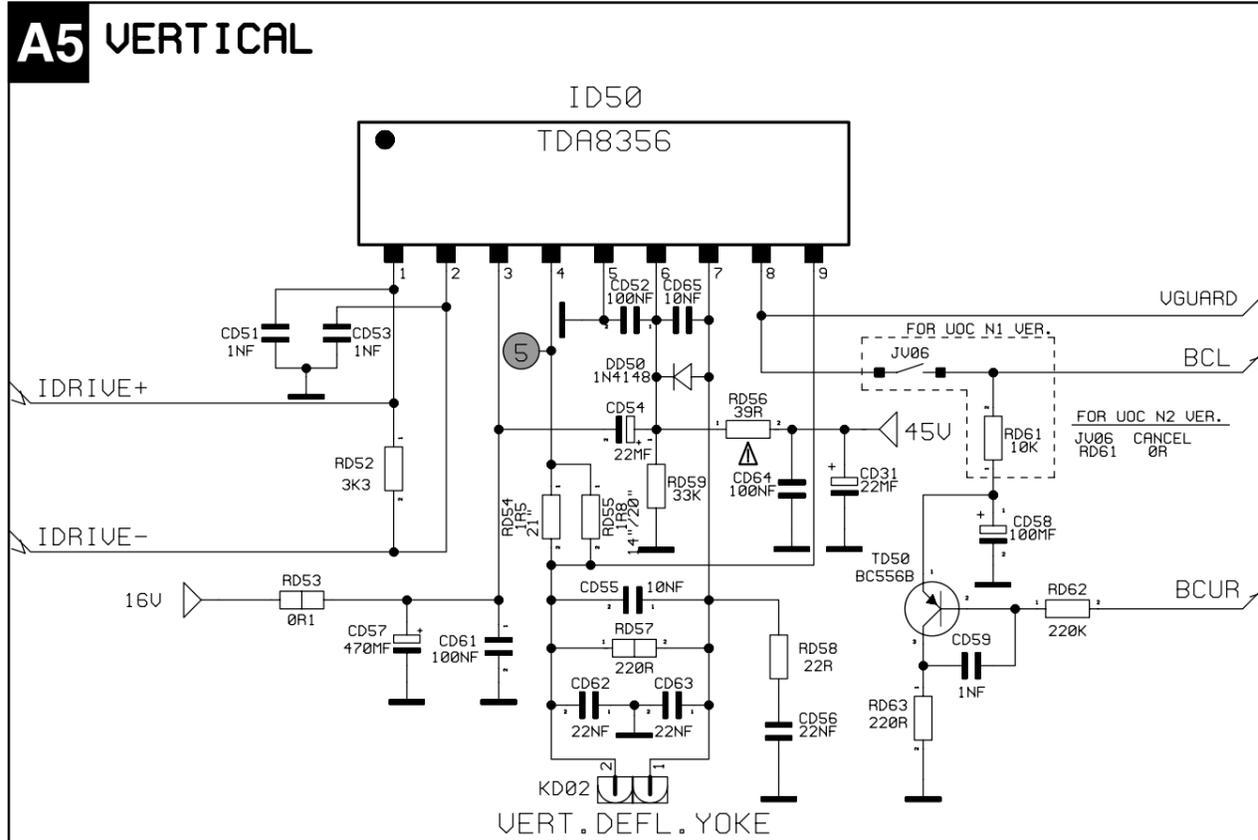
**A3 SCARTS**



**A4 POWER SUPPLY**

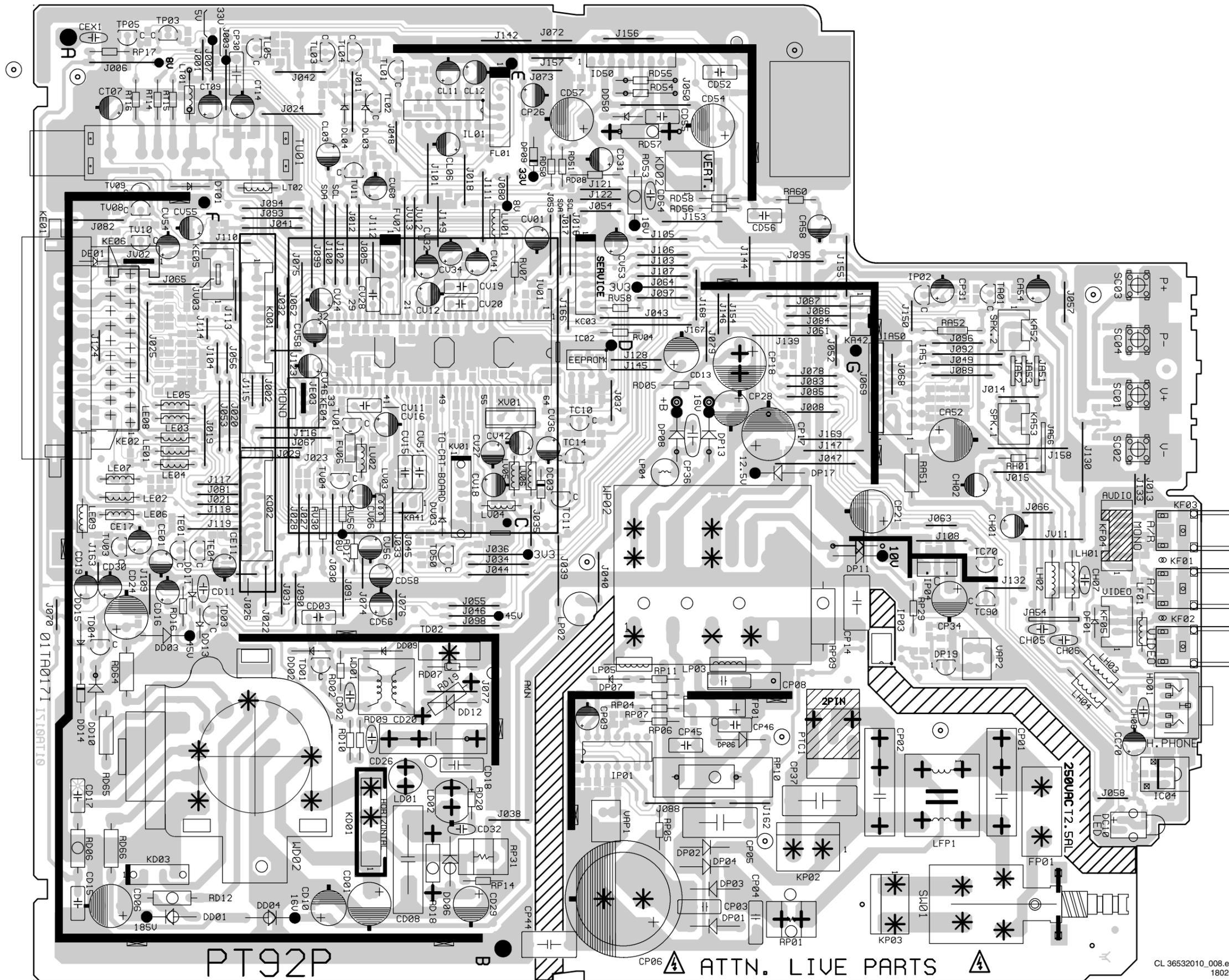


Main Panel: Vertical, Horizontal, Tuner and Headphone





Layout Main Panel (Top Side)

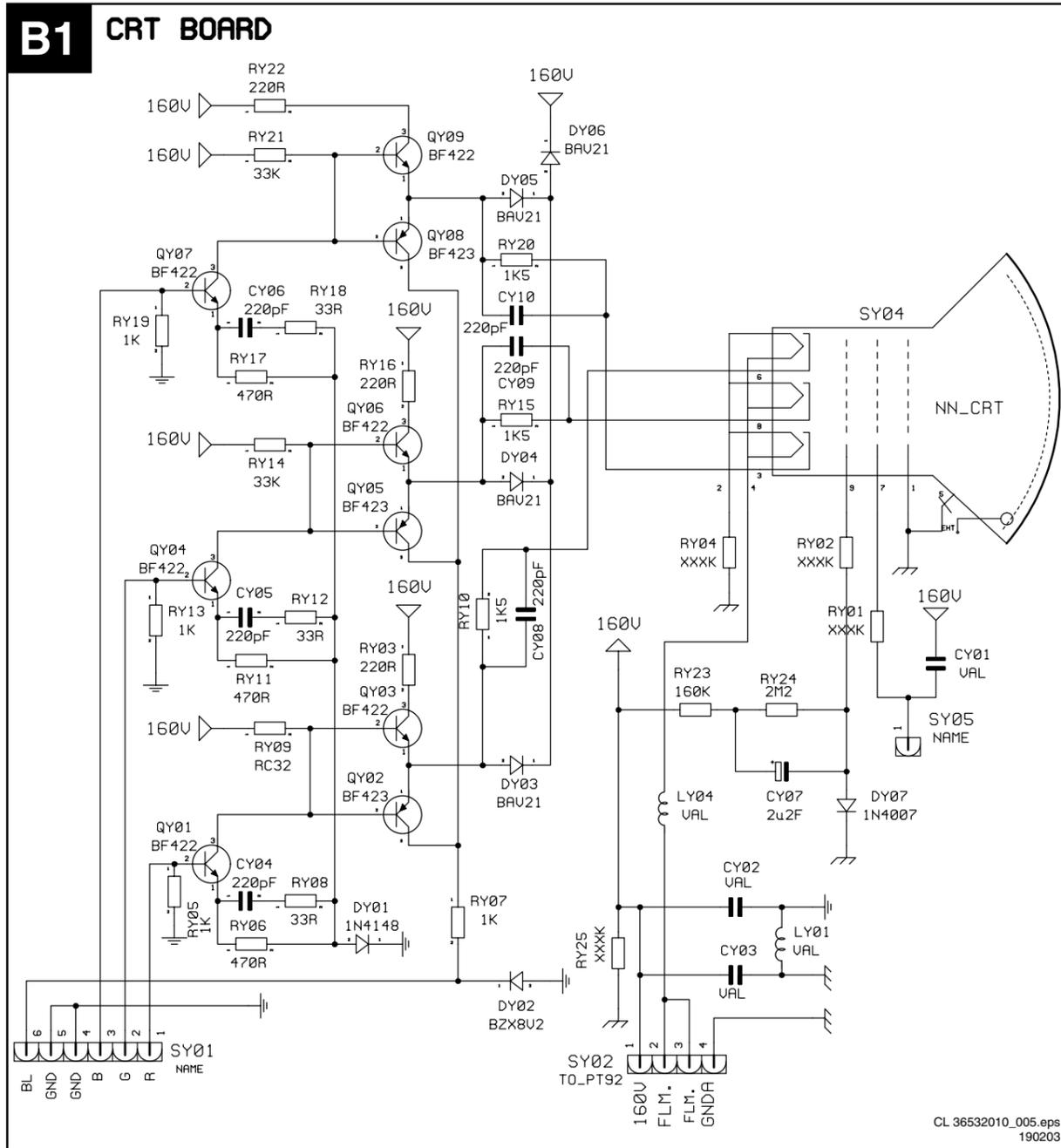


PT92P

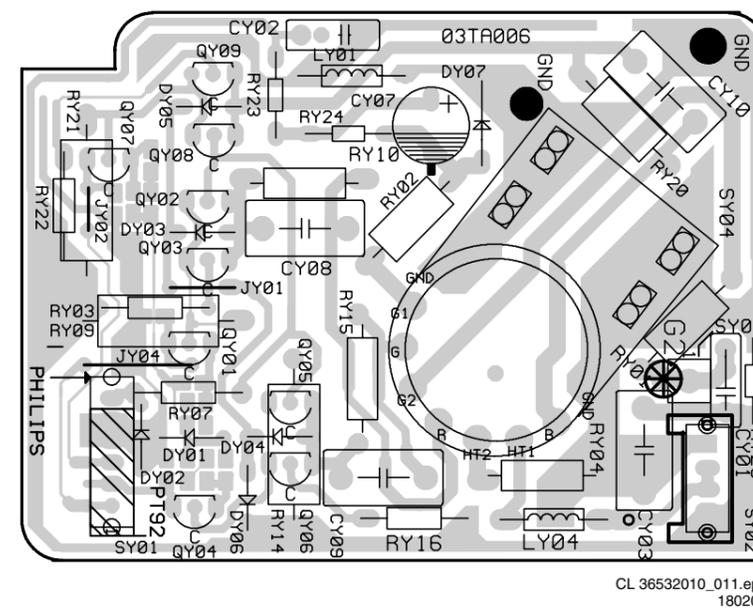
ATTN. LIVE PARTS



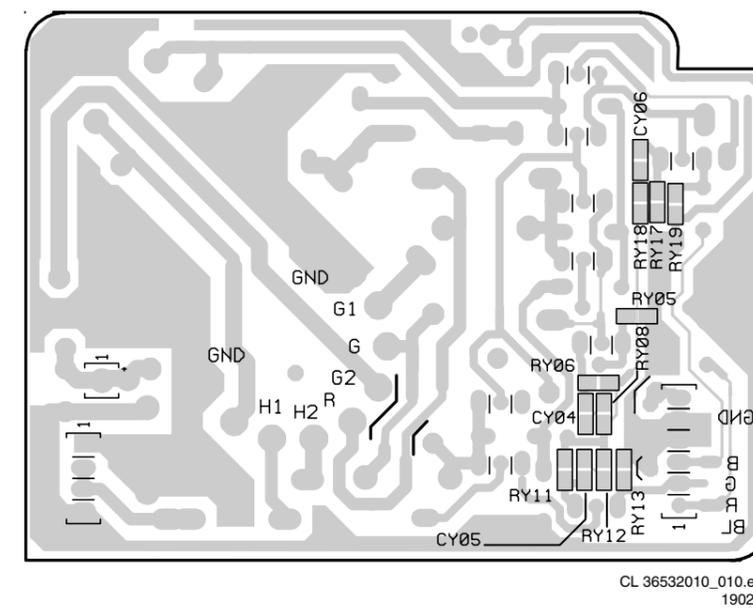
CRT Board



Layout CRT Board (Top Side)



Layout CRT Panel (Bottom Side)



## 8. Alignments

### Index of this chapter

1. Hardware Alignments
2. Software Alignments/Settings

### 8.1 Hardware Alignments

#### 8.1.1 System Voltage Adjustment

- Switch the TV in AV mode by pressing the AV button on the remote control unit (minimum beam current condition).
- Adjust the VAP1 potentiometer until you measure 110Vdc for 14" or 115 Vdc for 20" on the cathode of diode DP08.

### 8.2 Software Alignments/Settings

Enter the Service Mode (see chapter 5). The Service Mode menu will now appear on the screen. The first screen that is displayed is of the IF adjustment. With the CURSUR DOWN key the next menu item will be displayed. The value can be changed with the LEFT/RIGHT CURSOR keys.

#### 8.2.1 Adjustments

##### IF:

You can select the following IF frequencies: 38.9, 38.0, 58.8 and 45.8 MHz  
Default value is 38.9 for PAL BG, DK and L and 33.4 for PAL L'.

##### IFL1:

You can select the following IF frequencies: 33.4 and 33.9 MHz  
Default value is 33.9

Connect a PLL pattern generator to the TV and select a crosshatch pattern. Enter the service menu as described in chapter 5 and perform the geometry adjustments HP, HB, HS, VA, VS and VSH.

Press the MENU or OSD key to leave the service menu.

##### HP:

Horizontal Parallelogram. Default value is 31.

##### HB:

Horizontal Bow. Default value is 31.

##### HS:

Horizontal Shift. Default value is 33.

##### VS:

Vertical Slope. Default value is 29.

##### VA:

Vertical Amplitude. Default value is 51.

##### SC:

S-Correction. Default value is 15.

##### VSD:

Vertical Scan Disable. Default value is off.

With this bit the G2 can be adjusted. When this item is selected information about the G2 is displayed (INCR, OK, DECR). Turn the G2 potentiometer on the LOT until the screen displays "OK". "INCR" means the G2 must be increased and "DECR" means the G2 must be decreased.

##### VSH:

Vertical Shift. Default value is 41.

Connect a pattern generator to the TV and select a colour bar. Set the contrast to 70%, brightness in the middle and the colour saturation in the middle. Enter the service menu as described in chapter 5 and perform the video adjustments BLR, BLG, WPR, WPG, WPB, Ys, Yn, Yp and Yo.

Press the MENU or OSD key to leave the service menu.

##### BLR:

Black Level Red. Default value is 32.

##### BLG:

Black Level Green. Default value is 31.

##### WPR:

White Point Red. Default value is 40.

##### WPG:

White Point Green. Default value is 32.

##### WPB:

White Point Blue. Default value is 32.

##### Ys:

Y-delay for SECAM. Default value is 5.

##### Yn:

Y-delay for NTSC. Default value is 5.

##### Yp:

Y-delay for PAL. Default value is 5.

##### Yo:

Y-delay for external. Default value is 5.

##### AGC:

Automatic gain control. Default value is 30.

##### CL:

Cathode Drive level. Default value is 6.

##### Bits0 00:

ACL, FCO, SVO, HP2, FSL, OSO:

These bits are control bits of the video processor. The default value is 0.

It is advised to keep these bits on the default value.

##### Bits1 18:

FFI, BTSC, FMWS, BKS, IFS:

These bits are control bits of the video processor.

The default values are:

FFI = 0

BTSC = 0

FMWS = 0

BKS = 1

IFS = 1

It is advised to keep these bits on the default value.

##### TXT-CL:

Teletext Cathode Drive level. Default value is 5

#### 8.2.2 Options

Options are used to control the presence/absence of certain features and hardware.

An Option byte represents a number of different options. All options are controlled via six option bytes.

##### How to change an Option byte

Use a LEFT/RIGHT CURSOR keys to change the option byte. The byte values will change from 00 to FF.

Op1	87
PAL-BG	1
PAL-DK	1
PAL-I	1
PAL-M	0
PAL-N	0
NTSC-M	0
NTSC-443	0
SECAM-BG	1

CL 36532010\_020.eps  
200203

Figure 8-1 Option Code Screen

**Option byte 1 (Op1)****PAL-BG**

1: PAL BG available  
 0: PAL BG not available  
 Default setting = 1

**PAL-DK**

1: PAL DK available  
 0: PAL DK not available  
 Default setting = 1

**PAL-I**

1: PAL I available  
 0: PAL I not available  
 Default setting = 1

**PAL-M**

1: PAL M available  
 0: PAL M not available  
 Default setting = 0

**PAL-N**

1: PAL N available  
 0: PAL N not available  
 Default setting = 0

**NTSC-M**

1: NTSC M available  
 0: NTSC M not available  
 Default setting = 1

**NTSC-443**

1: NTSC 4.43 available  
 0: NTSC 4.43 not available  
 Default setting = 1

**SECAM\_BG**

1: SECAM BG available  
 0: SECAM BG not available  
 Default setting = 1

**Option byte 2 (Op2)****SECAM DK**

1: SECAM DK available  
 0: SECAM DK not available  
 Default setting = 1

**FRANCE**

1: FRANCE available  
 0: FRANCE not  
 Default setting = 1

**SYS-FR**

1: System France available  
 0: System France not available  
 Default setting = 1

**SYS-UK**

1: System UK available  
 0: System UK not available  
 Default setting = 1

**AV2**

1: AV2 available  
 0: AV2 not available  
 Default setting = 0

**AV-S**

1: AV-S available  
 0: AV-S not available  
 Default setting = 0

**AV3**

1: AV3 available  
 0: AV3 not available  
 Default setting = 0

**AV3S**

1: AV3S available  
 0: AV3S not available  
 Default setting = 0

**Option byte 3 (Op3)****JR**

1: Stereo volume control via PWM-DACs enabled  
 0: Stereo volume control via PWM-DACs disabled  
 Default setting = 0

**HP**

1: reserved\*  
 0: reserved\*  
 Default setting = 0

**Vbar**

1: Volume bar OSD enabled  
 0: Volume bar OSD disabled  
 Default setting = 1

**SubWoof**

1: reserved\*  
 0: reserved\*  
 Default setting = 0

**Presets**

1: Predefined settings are available  
 0: Predefined settings are not available  
 Default setting = 1

**Lock**

1: reserved\*  
 0: reserved\*  
 Default setting = 1

**Hotel**

1: Hotel mode enabled  
 0: Hotel mode disabled  
 Default setting = 0

**Option byte 4 (Op4)****16:9**

1: 16:9 enabled  
 0: 16:9 disabled  
 Default setting = 0

**110**

1: 110 Deg. Picture tube  
 0: 90 Deg. Picture tube  
 Default setting = 0

**Hpol**

1: Polarity of the Horizontal sync for OSD is negative  
 0: Polarity of the Horizontal sync for OSD is positive  
 Default setting = 0

**Vpol**

1: Polarity of the Vertical sync for OSD is negative  
 0: Polarity of the Vertical sync for OSD is positive  
 Default setting = 0

**Field**

When set, the vertical sync for OSD is in the second half line at the start of an even field. When not set in the first half line at the start of an even field.

1: enabled

0: disabled

Default setting = 1

**FEOut**

1: CVBS signal always present on AV1

0: CVBS signal not always present on AV1

Default setting = 1

**Swon**

1: Last status enabled

0: Last status disabled

Default setting = 1

**VGCheck**

When service mode is activated vertical guard is switched off.

1: VG Check enabled

0: VG Check disabled

Default setting = 1

**Option byte 5 (Op5)****Clock**

1: Clock menu enabled  
 0: Clock menu disabled  
 Default setting = 1

**AM/PM**

1: AM/PM enabled  
 0: AM/PM disabled  
 Default setting = 0

**AVL**

1: Automatic Volume Level enabled  
 0: Automatic Volume Level disabled  
 Default setting = 1

**1norma**

1: reserved\*  
 0: reserved\*  
 Default setting = 0

**FLOF-TXT**

1: FLOF TXT on  
 0: FOLF TXT off  
 Default setting = 1

**TR**

1: Sound is not muted in weak signals  
 0: Sound is muted in weak signals  
 Default setting = 0

**P-AND-P**

1: Plug and Play enabled  
 0: Plug and Play disabled  
 Default setting = 1

**Option byte 6 (Op6)****UOC-J**

1: reserved\*  
 0: reserved\*  
 Default setting = 0

**IgnrSUP**

1: Ignore the status of SUP at power on  
 0: Not ignore the status of SUP at power on  
 Default setting = 0

**Ignr NDF**

1: Ignore the status of NDF at power on  
 0: Not ignore the status of NDF at power on  
 Default setting = 1

**TXT on**

1: Teletext available  
 0: Teletext not available  
 Default setting = 0

**SYS-DK**

1: System DK available  
 0: System DK not available  
 Default setting = 1

**WSS**

1: Wide Screen Signalling bit enabled  
 0: Wide Screen Signalling bit disabled  
 Default setting = 0

**Note:**

- Reserved bits (\*) must be set to 0.
- The 7th bit of Option byte 03 enables the 'no video ident' timer.

**8.2.3 Tune IF****TSL:**

Start frequency of the low-band in MHz.

**TEL:**

End frequency of the low-band in MHz.

**TSM:**

Start frequency of the mid-band in MHz.

**TEM:**

Start frequency of the mid-band in MHz.

**TSH:**

Start frequency of the high-band in MHz.

**TEH:**

Start frequency of the high-band in MHz.

**TBL:**

Hex value needed for switching to the low-band.

**TBM:**

Hex value needed for switching to the mid-band.

**TBH:**

Hex value needed for switching to the high-band.

Tuner Type	Philips	Orega	Temic	Samsung	Alps
TSL	45	45	45	45	45
TEL	160	118	150	150	180
TSM	160	118	150	150	180
TEM	440	400	440	425	465
TSH	440	400	440	425	465
TMH	863	865	865	865	900
TBL	A1	3	1	1	1
TBM	92	6	2	2	2
TBH	34	85	4	8	0C

**8.2.4 Hotel Mode**

Installation and Child Lock Menus are omitted in Hotel Mode. You cannot search any channel when the Hotel Mode is activated.

**8.2.5 Volume**

In Hotel Mode the volume level cannot be increased higher than the level adjusted in the Service Mode.

## 9. Circuit Descriptions and Abbreviation List

### 9.1 Circuit Descriptions

Not applicable.

### 9.2 Abbreviation List

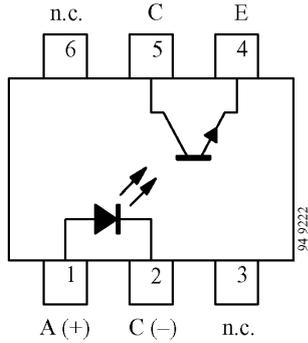
Doc	Depends on Chassis	GIN	Green in
CH-	Channel minus	RIN	Red in
CH+	Channel plus	FBLIN	Fast blanking in
Vol+	Volume +	5VSTB	Stand-by voltage
Vol-	Volume -	C	Chromo
IF1	Intermediate Frequency 1	AV.VID	Video signal for AV
IF2	Intermediate Frequency 2	BCUR	Beam Current
SCL	I2C Clock	E.AUD_F	External Audio
AGC	Auto Gain Control	H_FLYBACK	Horizontal Flyback
SDA	I2C Data	H_DRIVE	Horizontal Drive
FBEXT	Fast Blanking External	VMEM	Voltage supplied for Eepro
R	Red		
G	Green		
B	Blue		
CVBSEXT1	External Composite Video Signal		
SC_OUT	Scart out		
SC_IN	Scart in		
CVBS	Composite Video Signal		
KEYB	Front panel keyboard		
5VD	5 V digital		
5VA	5 V analog		
ST_BY	Standby		
HOUT	Horizontal Output pulse		
110VOUT	110 V Horizontal power supply		
FBT	Flayback Transformer		
V_OSD	Vertical OSD		
V_AMP	Vertical Amplitude DAC output		
24V_VERT	24 V Vertical power supply		
VERT	Vertical Output pulse		
AV1/AV2	AV1 / AV2 information		
B_OSD	OSD Blue input		
G_OSD	OSD Green input		
R_OSD	OSD Red input		
FB_OSD	OSD Fast blanking Input		
CVBSOUT	Second Video Switch Output		
CVBSEXT	External CVBS input		
GNDA	Analog Ground		
AUDOUT	Main Audio Output		
VOL	Volume		
IR	Infrared led		
RMOT	Remote Control		
L/L'	Secam L/L' sound standard		
TXTSW	Teletext switch		
BCL	Beam Current Limiter		
FLM.	Flaman		
LOUT	Left out		
VGND	Video ground		
ON/STBY	On/Standby		
MDO	Mode control data output		
PRST	Preset		
VGUARD	Vertical guard voltage		
IDRIVE+	Vertical drive +		
IDRIVE-	Vertical drive -		
VMICRO	Power supply for micro controller		
SW1	Switch 1		
EX.AUD	External audio		
E.AUD	ExternalAudio		
SC1IA	Scartin Audio		
SC1OUTL	Scartout Left		
SC1OUTA	Scartout Audio		
B/G-SND	BG Sound		
TV.VID	Video signal for TV		
BIN	Blue in		
STAT-AV	AV Status		

9.3 IC Data Sheets

In this paragraph, the internal block diagrams and pinning are given of ICs that are drawn as a "black box" in the electrical diagrams (with the exception of "memory" and "logic" ICs).

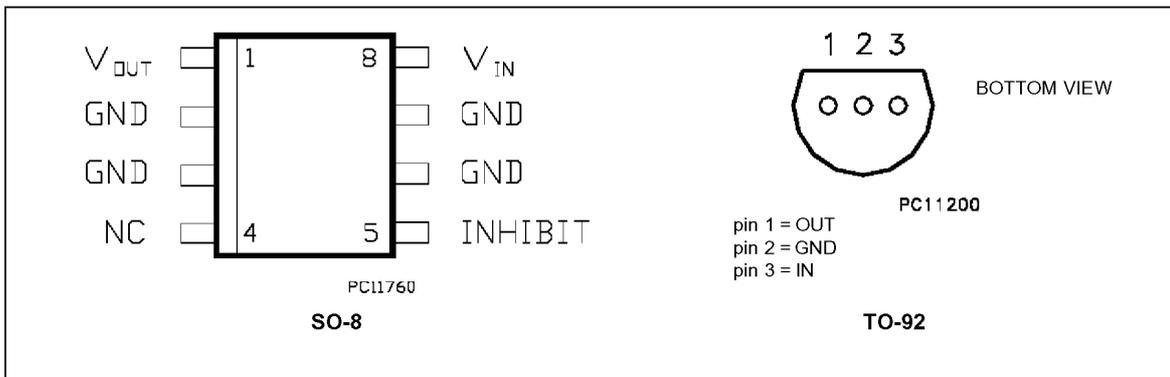
9.3.1 TCDT110(G) Series

Pin Connection

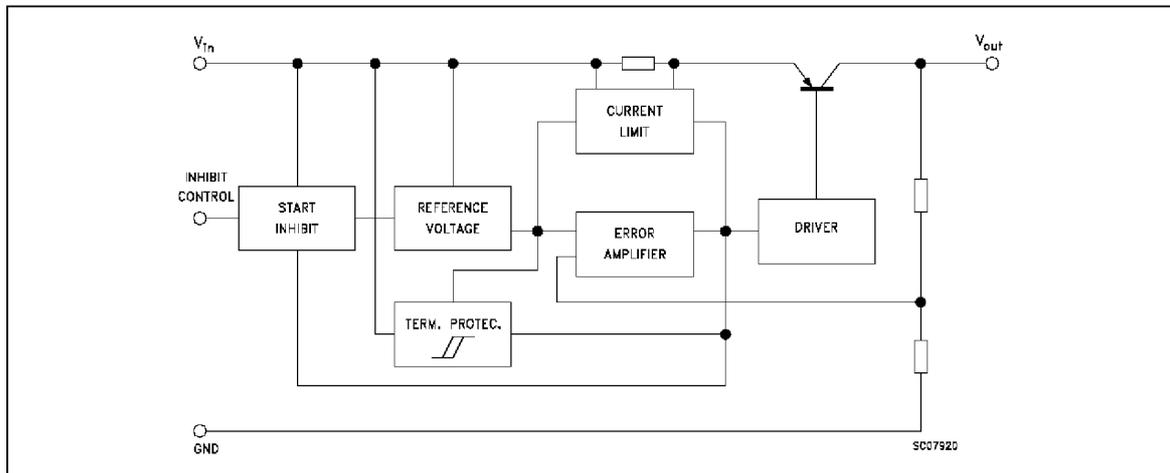


LE00AB/C

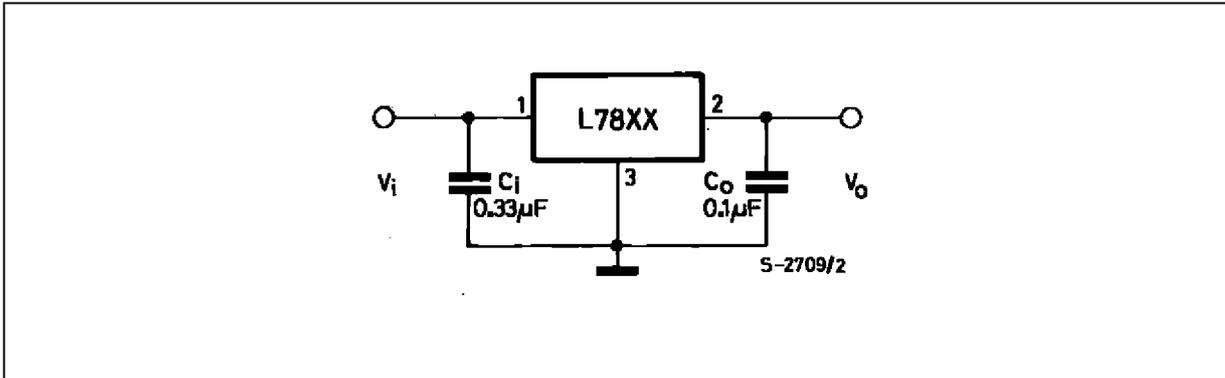
CONNECTION DIAGRAM AND ORDERING NUMBERS (top view)



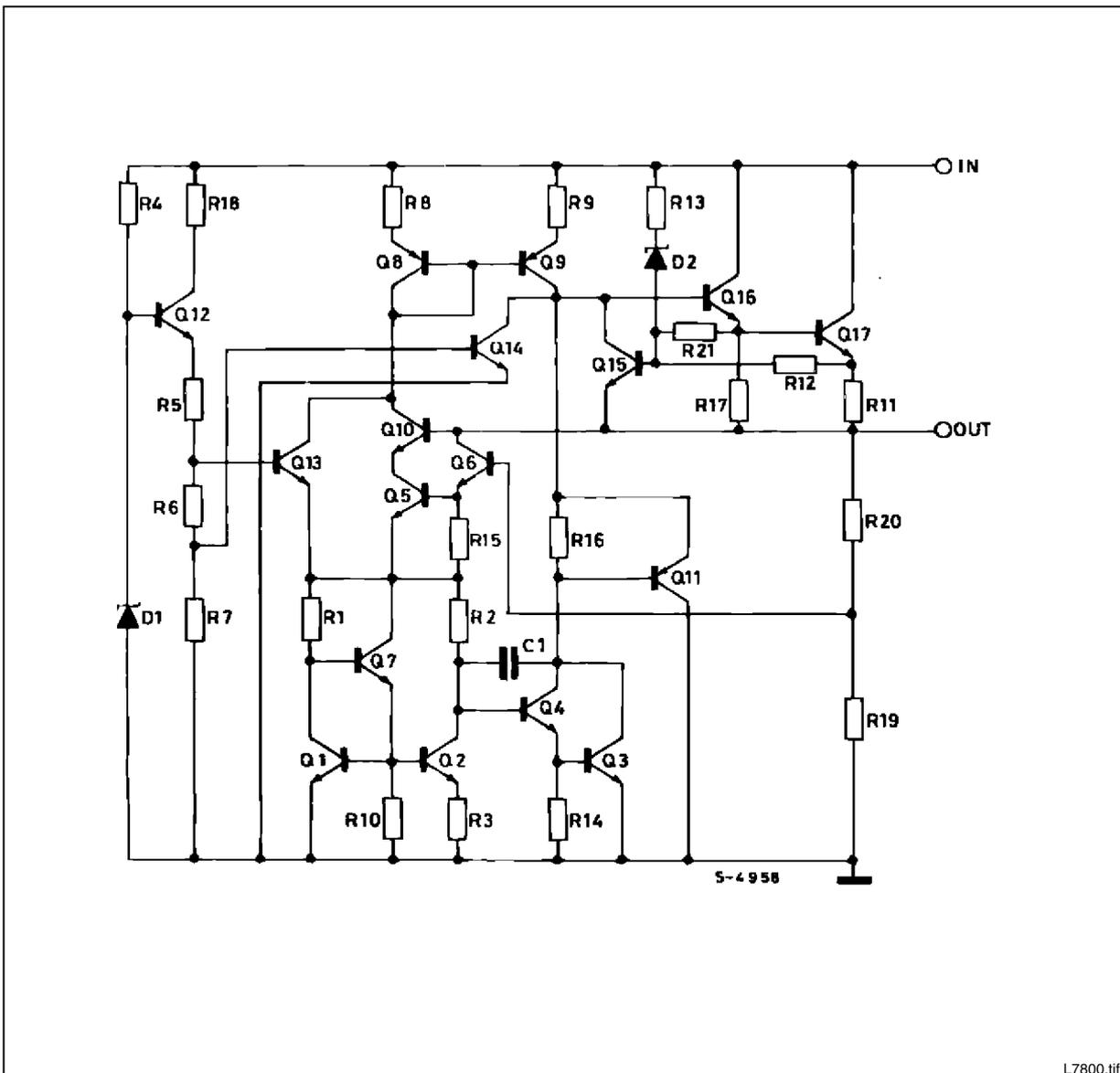
SCHEMATIC DIAGRAM



APPLICATION CIRCUIT

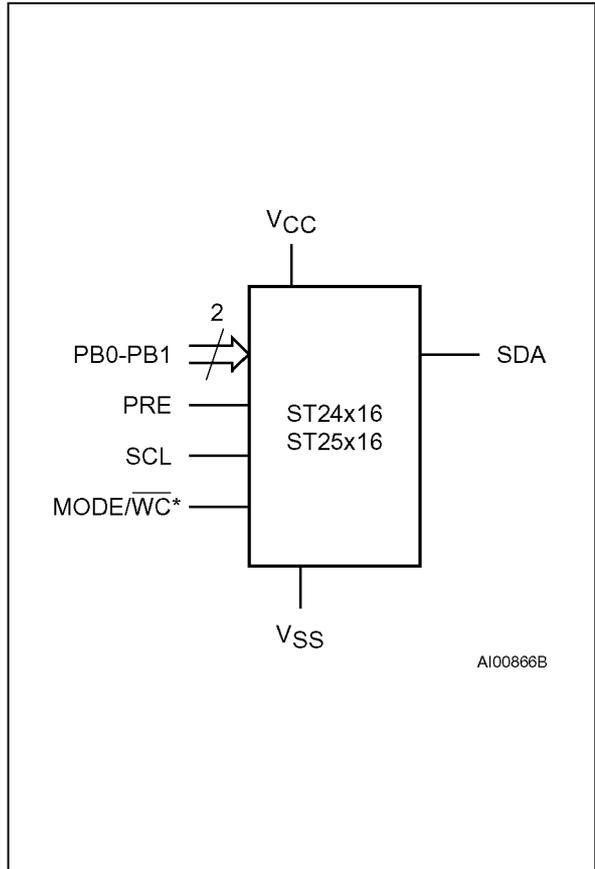
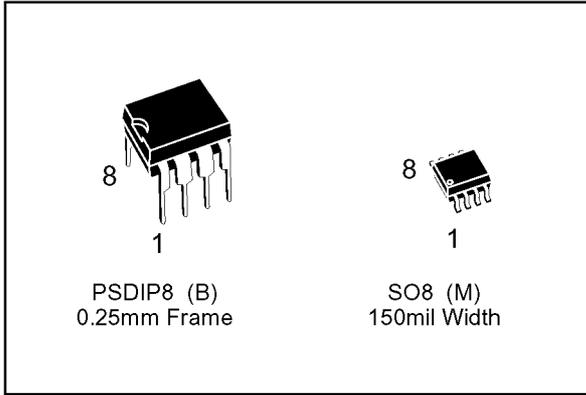


SCHEMATIC DIAGRAM



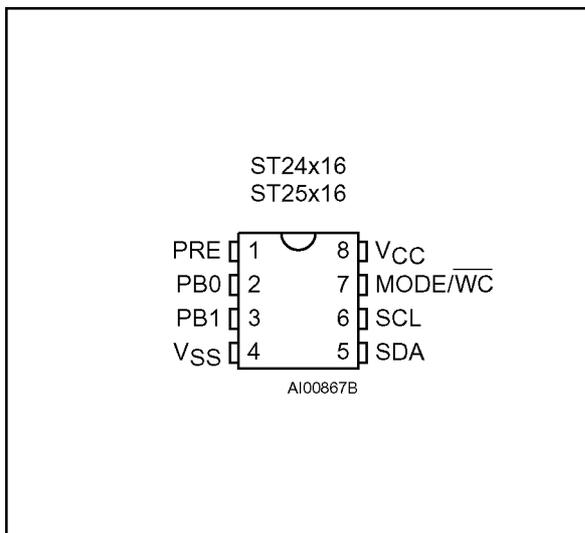
# ST24C16, ST25C16 ST24W16, ST25W16

## SERIAL 16K (2K x 8) EEPROM

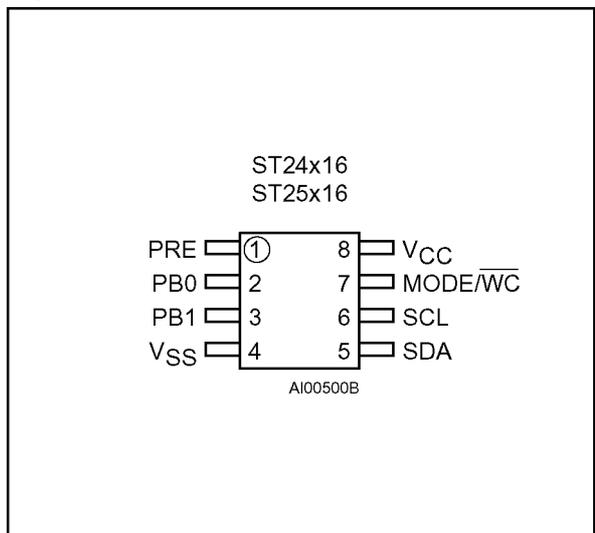


Note:  $\overline{WC}$  signal is only available for ST24/25W16 products.

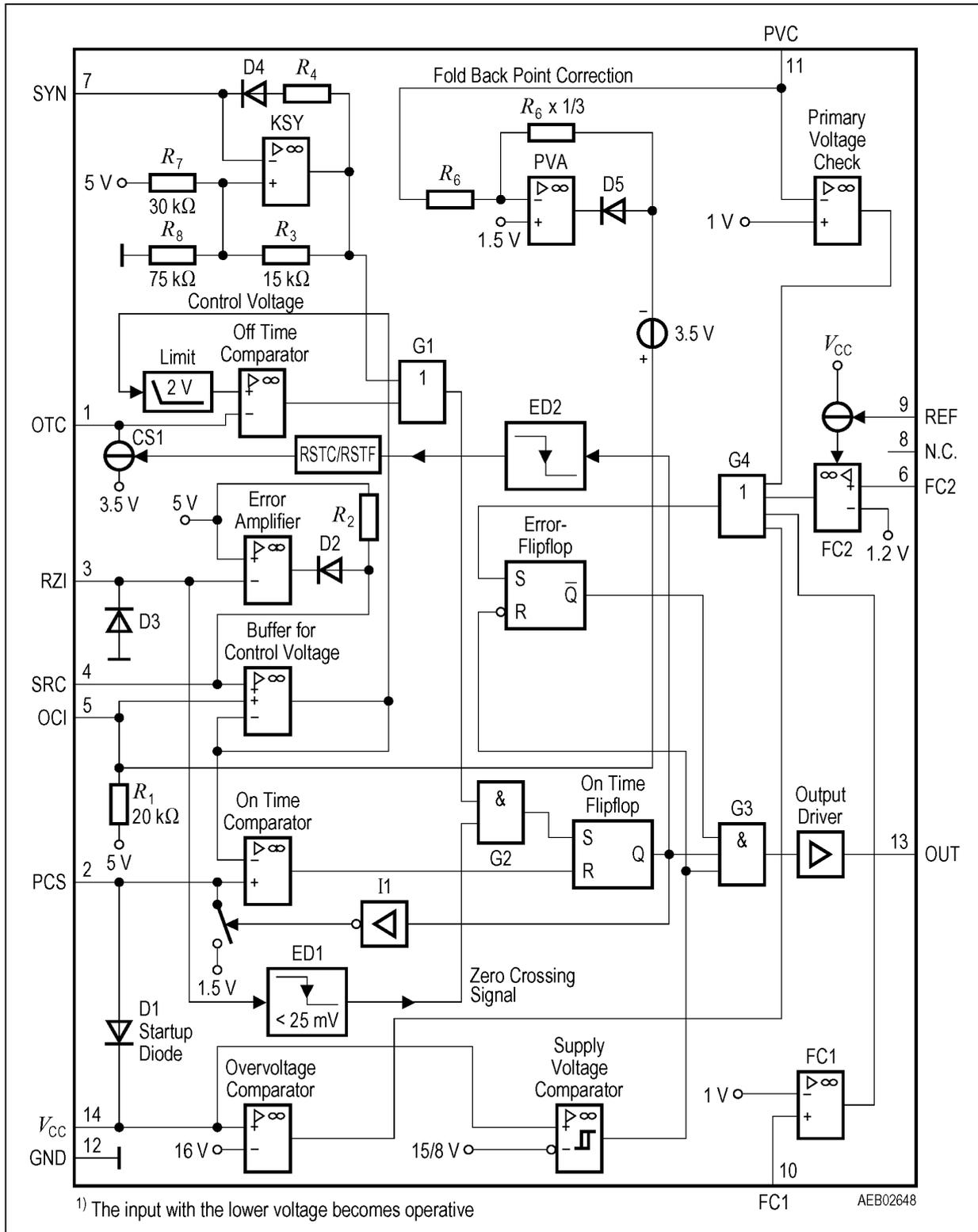
### DIP Pin Connections



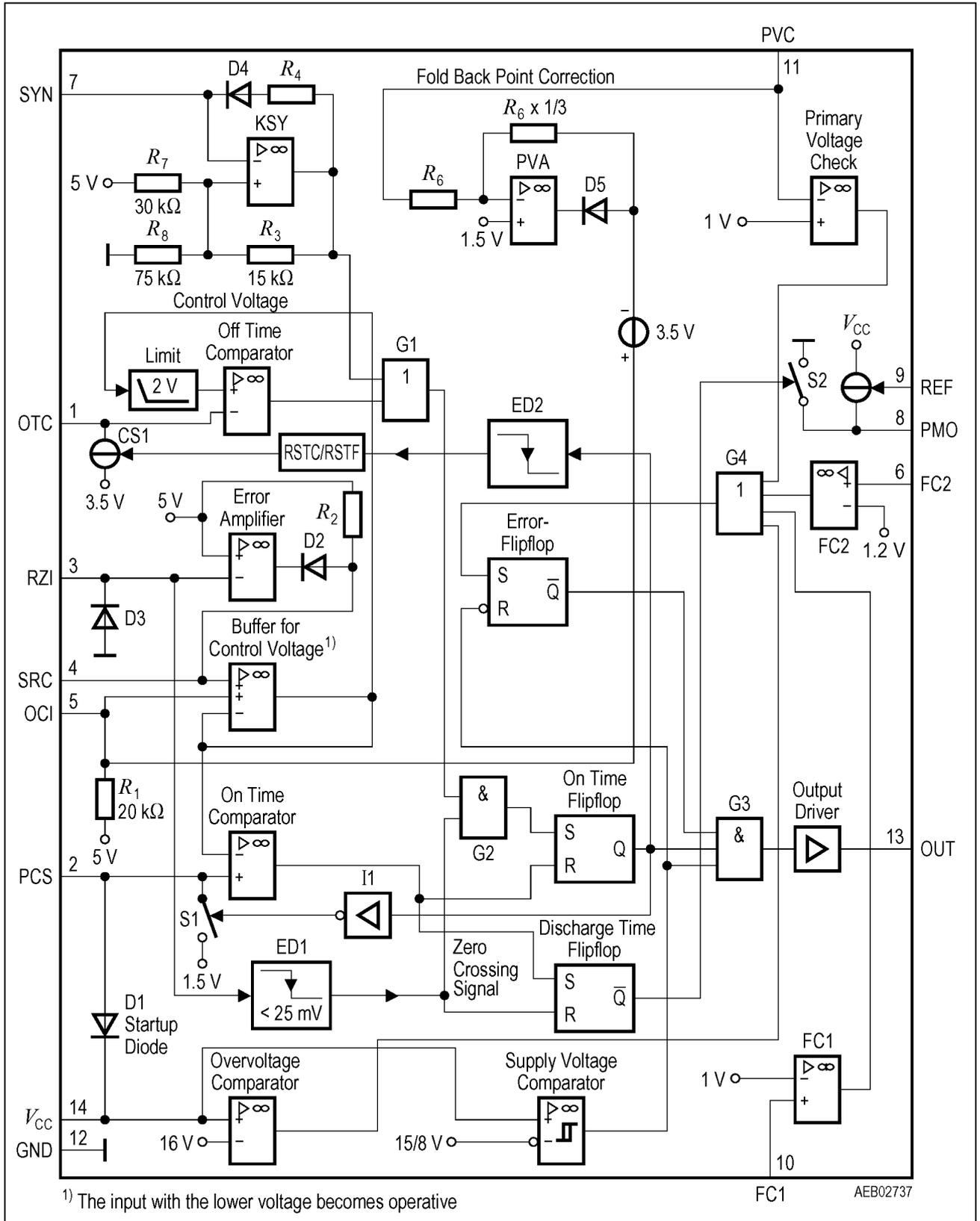
### SO8 Pin Connections



### 1.5 Block Diagrams



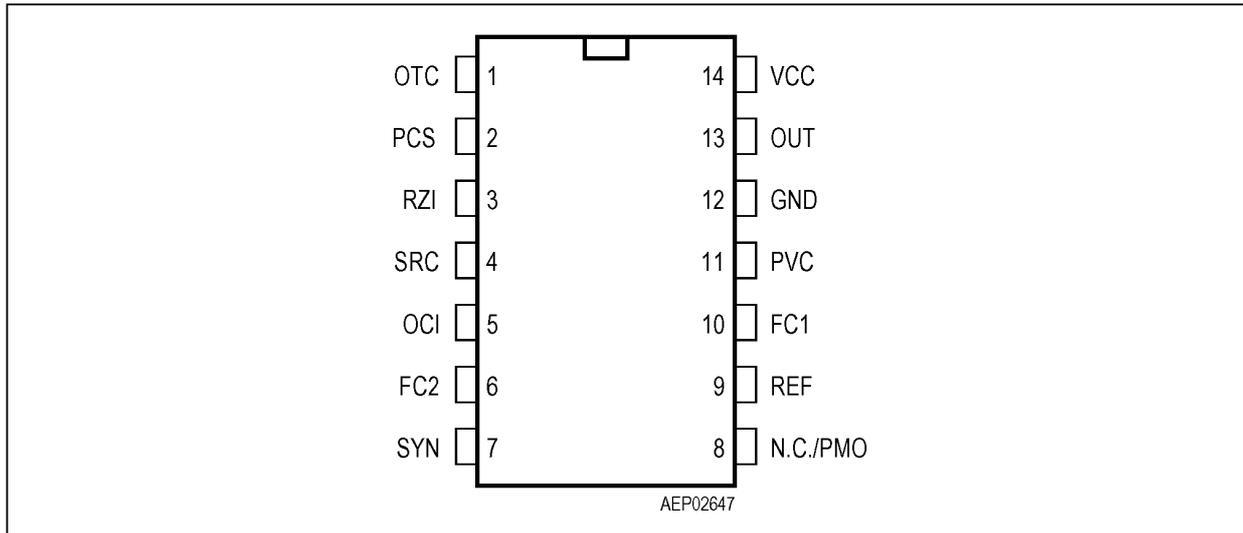
TDA 16846  
TDA 16847



**TDA 16846****TDA 16847**

The TDA 16846 is suited for TV-, VCR- sets and SAT receivers. It also can be good used in PC monitors.

The TDA 16847 is identical with TDA 16846 but has an additional power measurement output (pin 8) which can be used for a Temporary High Power Circuit.



**Figure 1** Pin Configuration (top view)

### 1.3 Pin Definitions and Functions

Pin	Symbol	Function
1	OTC	Off Time Circuit
2	PCS	Primary Current Simulation
3	RZI	Regulation and Zero Crossing Input
4	SRC	Soft-Start and Regulation Capacitor
5	OCI	Opto Coupler Input
6	FC2	Fault Comparator 2
7	SYN	Synchronization Input
8	N.C./PMO	Not Connected (TDA 16846)/PMO (TDA 16847)
9	REF	Reference Voltage and Current
10	FC1	Fault Comparator 1
11	PVC	Primary Voltage Check
12	GND	Ground
13	OUT	Output
14	VCC	Supply Voltage

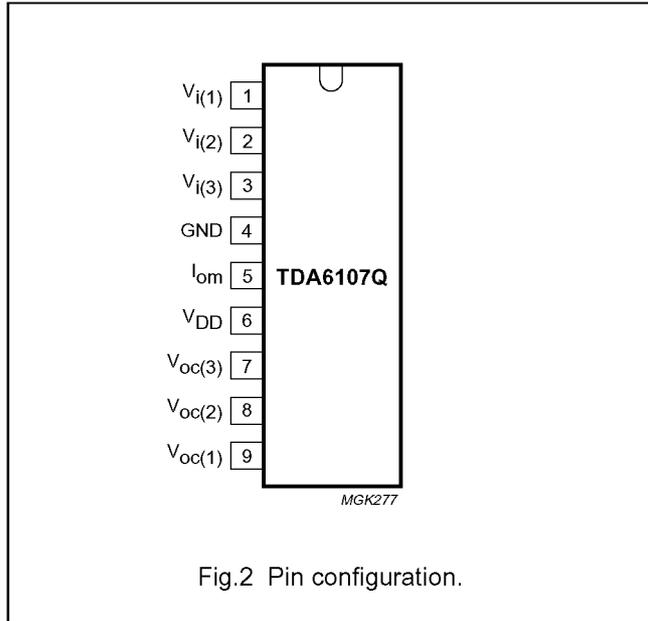


Triple video output amplifier

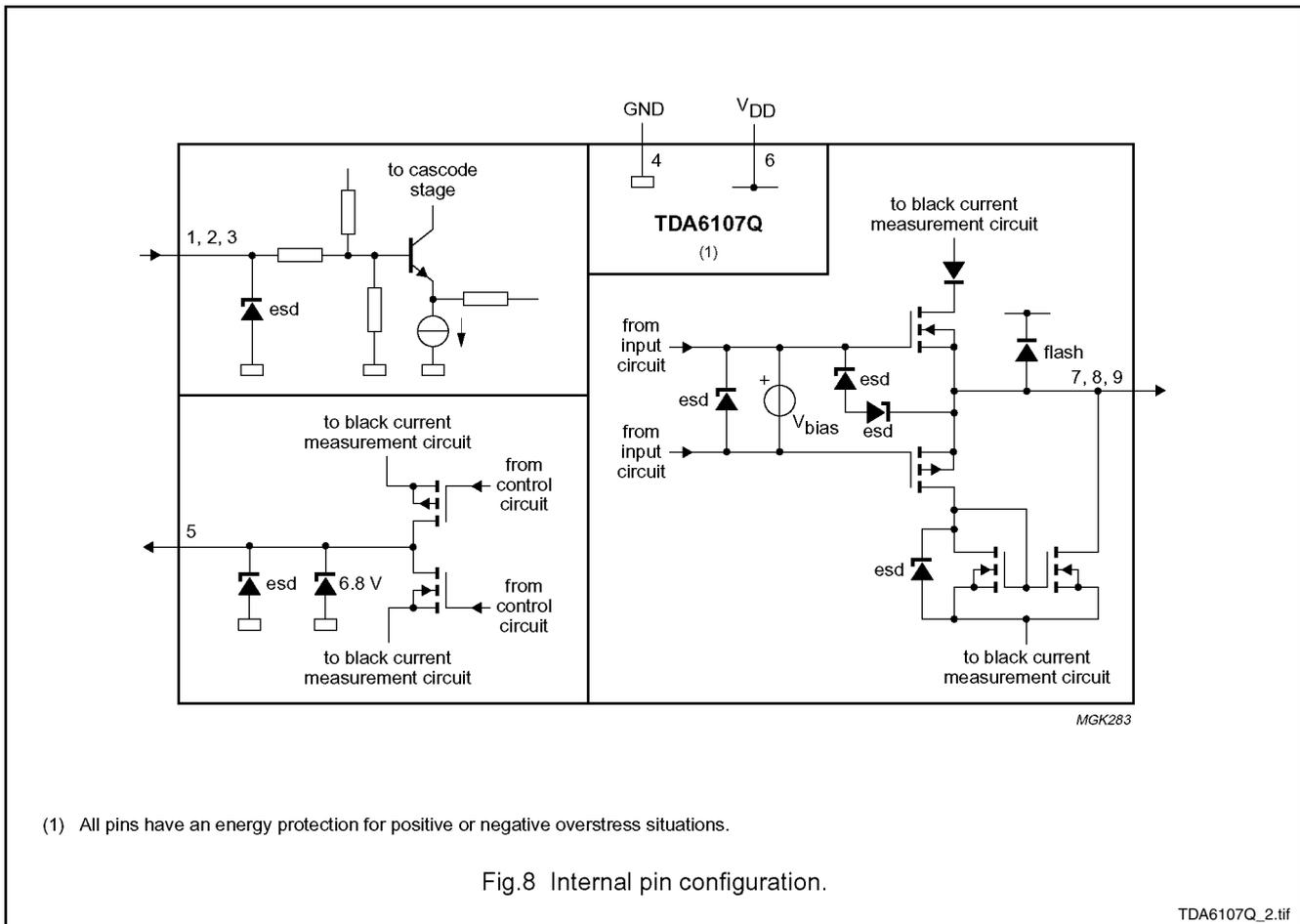
TDA6107Q

PINNING

SYMBOL	PIN	DESCRIPTION
$V_{i(1)}$	1	inverting input 1
$V_{i(2)}$	2	inverting input 2
$V_{i(3)}$	3	inverting input 3
GND	4	ground (fin)
$I_{om}$	5	black current measurement output
$V_{DD}$	6	supply voltage
$V_{oc(3)}$	7	cathode output 3
$V_{oc(2)}$	8	cathode output 2
$V_{oc(1)}$	9	cathode output 1

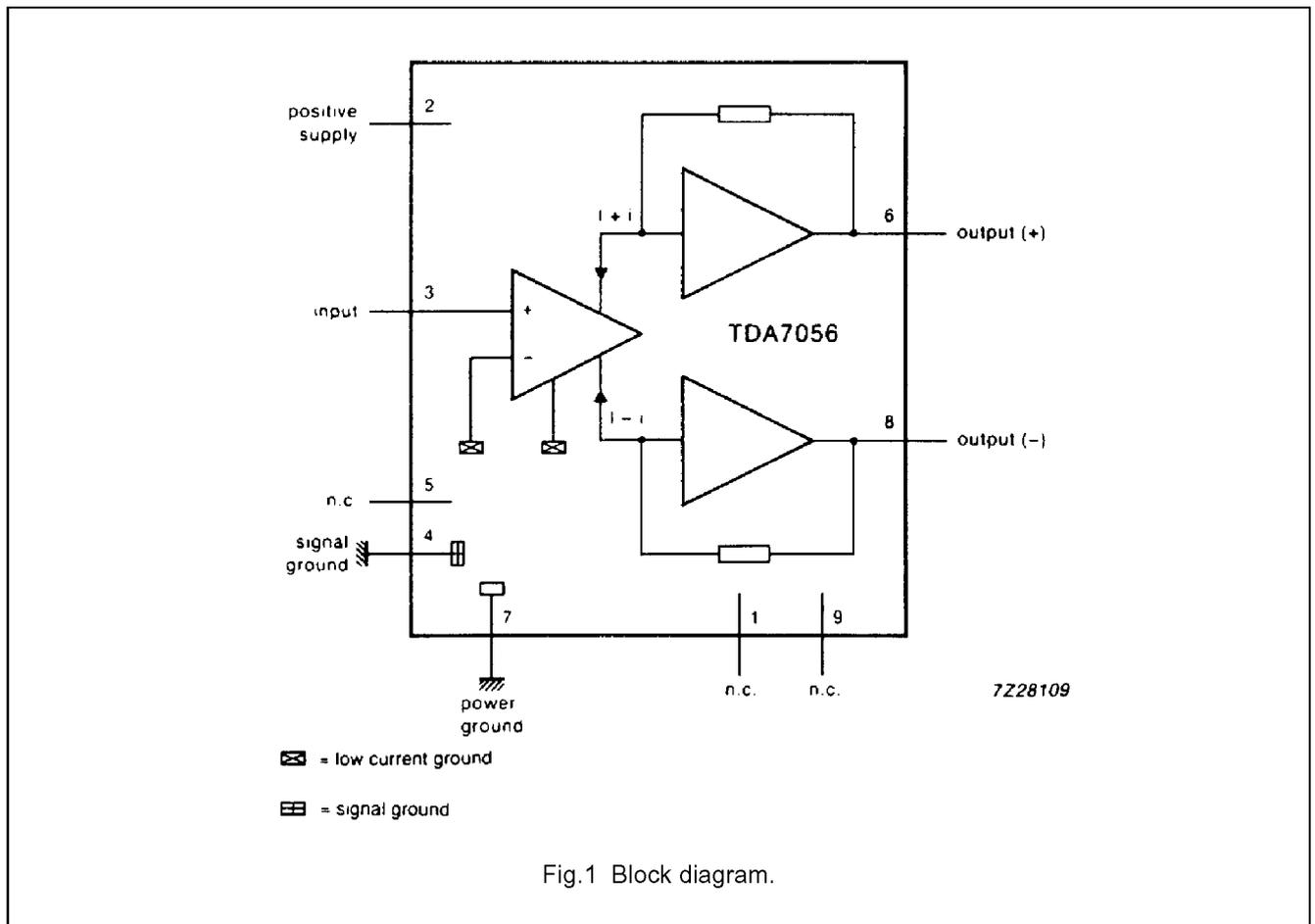


INTERNAL CIRCUITRY



## 3 W mono BTL audio output amplifier

TDA7056



## PINNING

PIN	DESCRIPTION
1	n.c.
2	$V_P$
3	input (+)
4	signal ground
5	n.c.
6	output (+)
7	power ground
8	output (-)
9	n.c.

## FUNCTIONAL DESCRIPTION

The TDA7056 is a mono output amplifier, designed for battery-fed portable radios and mains-fed equipment such as television. For space reasons there is a trend to decrease the number of external components. For portable applications there is also a trend to decrease the number of battery cells, but still a reasonable output power is required.

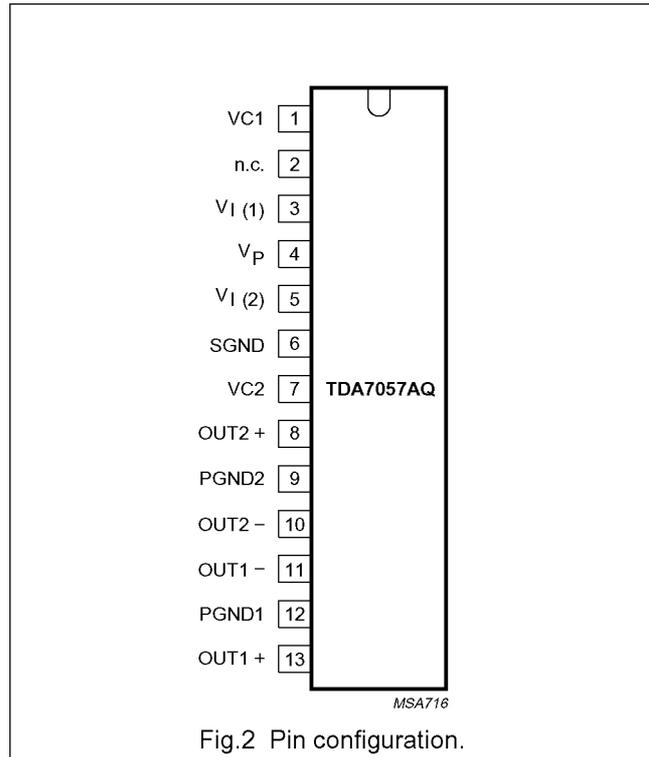
The TDA7056 fulfills both of these requirements. It needs no peripheral components, because it makes use of the Bridge-Tied-Load (BTL) principle. Consequently it has, at the same supply voltage, a higher output power compared to a conventional Single Ended output stage. It delivers an output power of 1 W into a loudspeaker load of 8  $\Omega$  with 6 V supply or 3 W into 16  $\Omega$  loudspeaker at 11 V without need of an external heatsink. The gain is internally fixed at 40 dB. Special attention is given to switch-on/off click suppression, and it has a good overall stability. The load can be short circuited at all input conditions.

## 2 x 5 W stereo BTL audio output amplifier with DC volume control

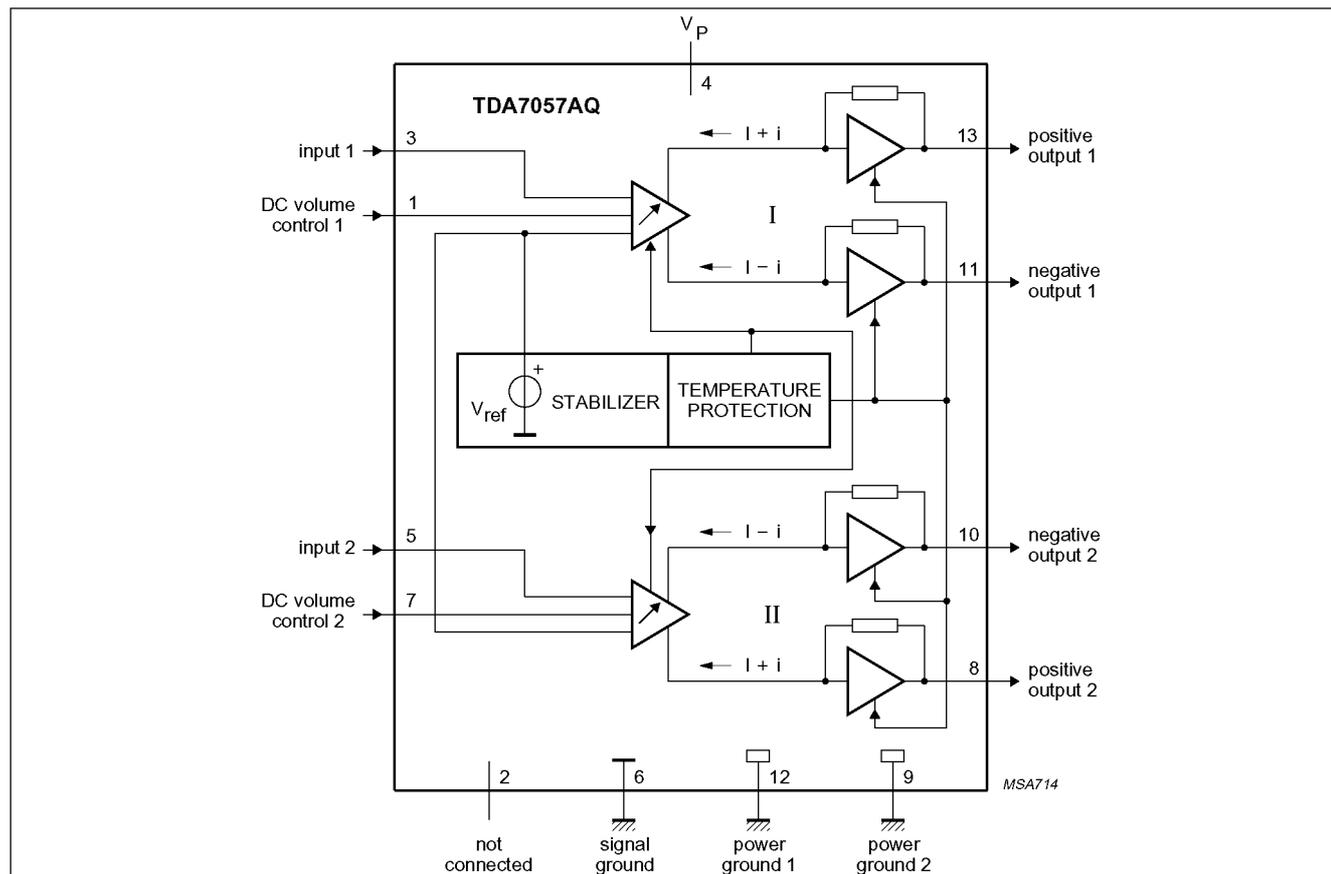
TDA7057AQ

### PINNING

SYMBOL	PIN	DESCRIPTION
VC1	1	DC volume control 1
n.c.	2	not connected
$V_{I(1)}$	3	voltage input 1
$V_P$	4	positive supply voltage
$V_{I(2)}$	5	voltage input 2
SGND	6	signal ground
VC2	7	DC volume control 2
OUT2+	8	positive output 2
PGND2	9	power ground 2
OUT2-	10	negative output 2
OUT1-	11	negative output 1
PGND1	12	power ground 1
OUT1+	13	positive output 1



### BLOCK DIAGRAM



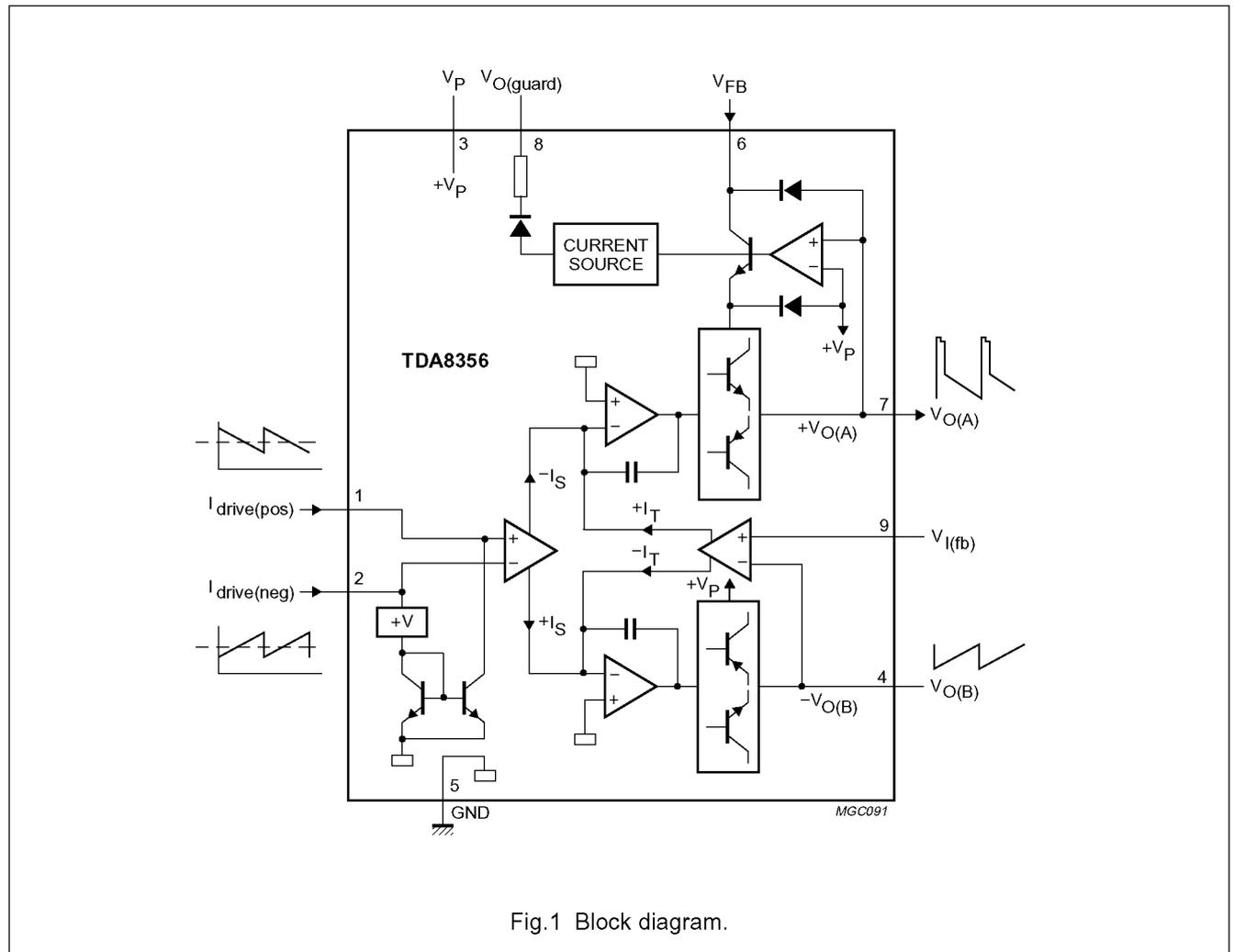
## DC-coupled vertical deflection circuit

TDA8356

## ORDERING INFORMATION

TYPE NUMBER	PACKAGE		
	NAME	DESCRIPTION	VERSION
TDA8356	SIL9P	plastic single-in-line power package; 9 leads	SOT131-2

## BLOCK DIAGRAM



## DC-coupled vertical deflection circuit

## TDA8356

## PINNING

SYMBOL	PIN	DESCRIPTION
$I_{\text{drive(pos)}}$	1	input power-stage (positive); includes $I_{\text{I(sb)}}$ signal bias
$I_{\text{drive(neg)}}$	2	input power-stage (negative); includes $I_{\text{I(sb)}}$ signal bias
$V_P$	3	operating supply voltage
$V_{O(B)}$	4	output voltage B
GND	5	ground
$V_{FB}$	6	input flyback supply voltage
$V_{O(A)}$	7	output voltage A
$V_{O(\text{guard})}$	8	guard output voltage
$V_{I(\text{fb})}$	9	input feedback voltage

## FUNCTIONAL DESCRIPTION

The vertical driver circuit is a bridge configuration. The deflection coil is connected between the output amplifiers, which are driven in phase opposition. An external resistor ( $R_M$ ) connected in series with the deflection coil provides internal feedback information. The differential input circuit is voltage driven. The input circuit has been adapted to enable it to be used with the TDA9150, TDA9151B, TDA9160A, TDA9162, TDA8366 and TDA8376 which deliver symmetrical current signals. An external resistor ( $R_{CON}$ ) connected between the differential input determines the output current through the deflection coil. The relationship between the differential input current and the output current is defined by:  $I_{\text{diff}} \times R_{CON} = I_{\text{coil}} \times R_M$ . The output current is adjustable from 0.5 A (p-p) to 2 A (p-p) by varying  $R_M$ . The maximum input differential voltage is 1.8 V. In the application it is recommended that  $V_{\text{diff}} = 1.5 \text{ V}$  (typ). This is recommended because of the spread of input current and the spread in the value of  $R_{CON}$ .

The flyback voltage is determined by an additional supply voltage  $V_{FB}$ . The principle of operating with two supply voltages (class G) makes it possible to fix the supply voltage  $V_P$  optimum for the scan voltage and the second supply voltage  $V_{FB}$  optimum for the flyback voltage. Using this method, very high efficiency is achieved.

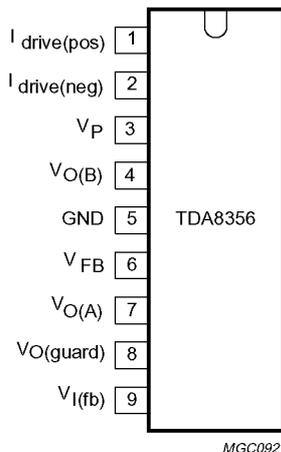
The supply voltage  $V_{FB}$  is almost totally available as flyback voltage across the coil, this being possible due to the absence of a decoupling capacitor (not necessary, due to the bridge configuration). The output circuit is fully protected against the following:

- thermal protection
- short-circuit protection of the output pins (pins 4 and 7)
- short-circuit of the output pins to  $V_P$ .

A guard circuit  $V_{O(\text{guard})}$  is provided. The guard circuit is activated at the following conditions:

- during flyback
- during short-circuit of the coil and during short-circuit of the output pins (pins 4 and 7) to  $V_P$  or ground
- during open loop
- when the thermal protection is activated.

This signal can be used for blanking the picture tube screen.

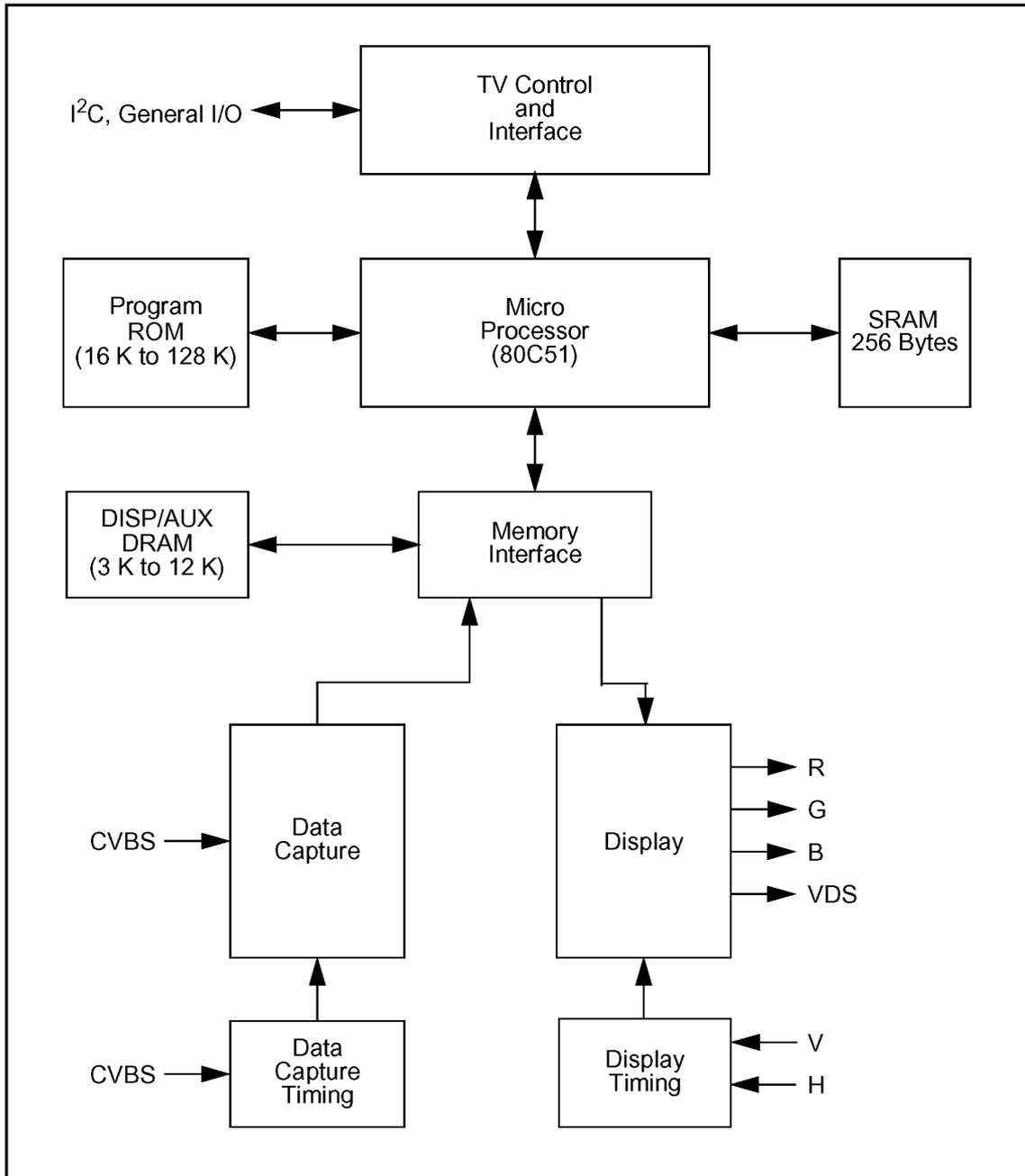


Metal block connected to substrate pin 5.  
Metal on back.

Fig.2 Pin configuration.

TV Signal Processor-Teletext Decoder  
with Embedded  $\mu$ -Controller

TDA 935X/6X/8X PS/N1 series

1 **FUNCTIONAL DESCRIPTION OF THE MICRO-CONTROLLER/TEXT DECODER**2 **Block Diagram**

TV signal processor-Teletext decoder with  
embedded  $\mu$ -Controller

## TDA935X/6X/8X PS/N1 series

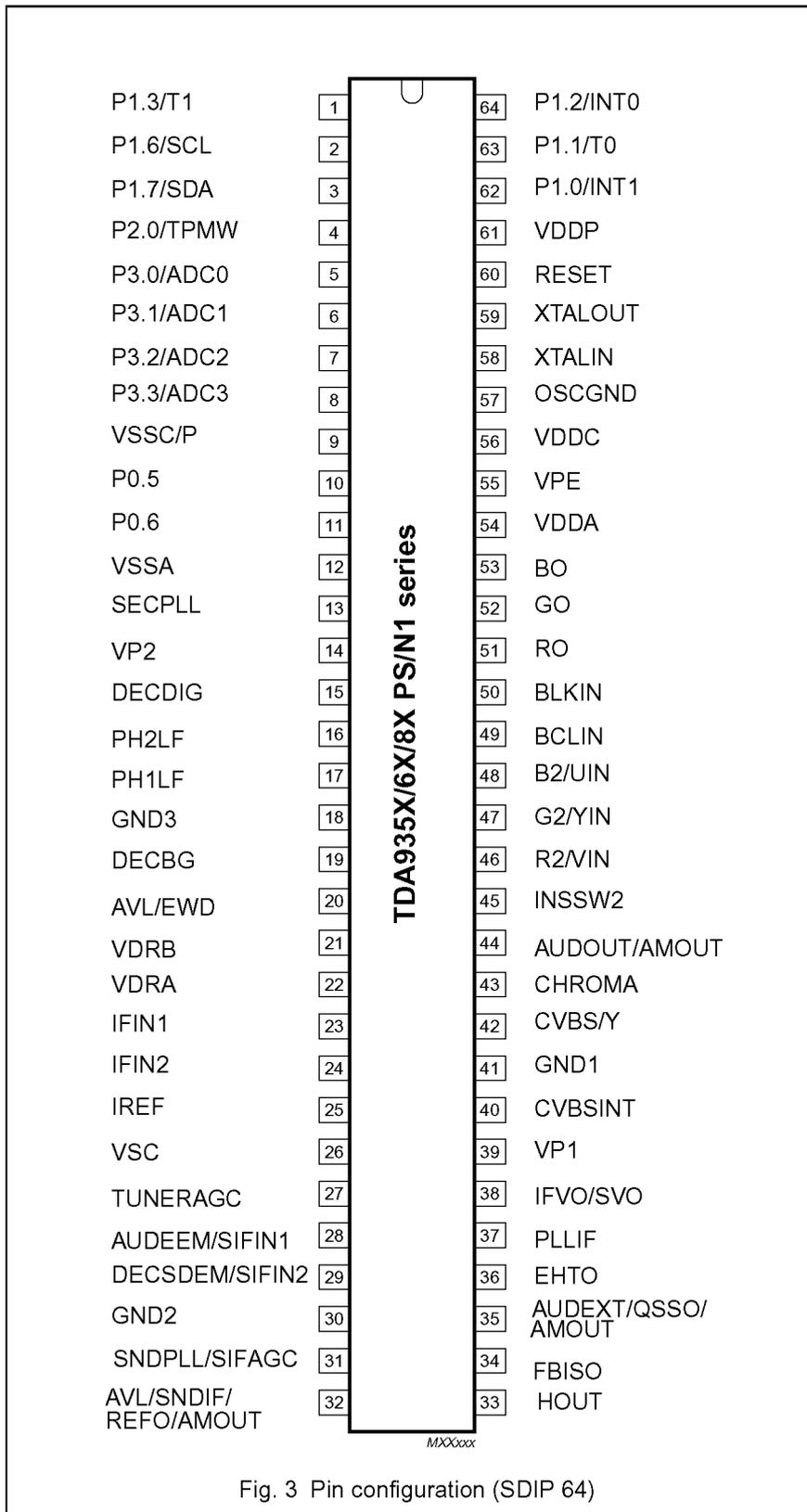


Fig. 3 Pin configuration (SDIP 64)



TV signal processor-Teletext decoder with embedded  $\mu$ -Controller

TDA935X/6X/8X PS/N1 series

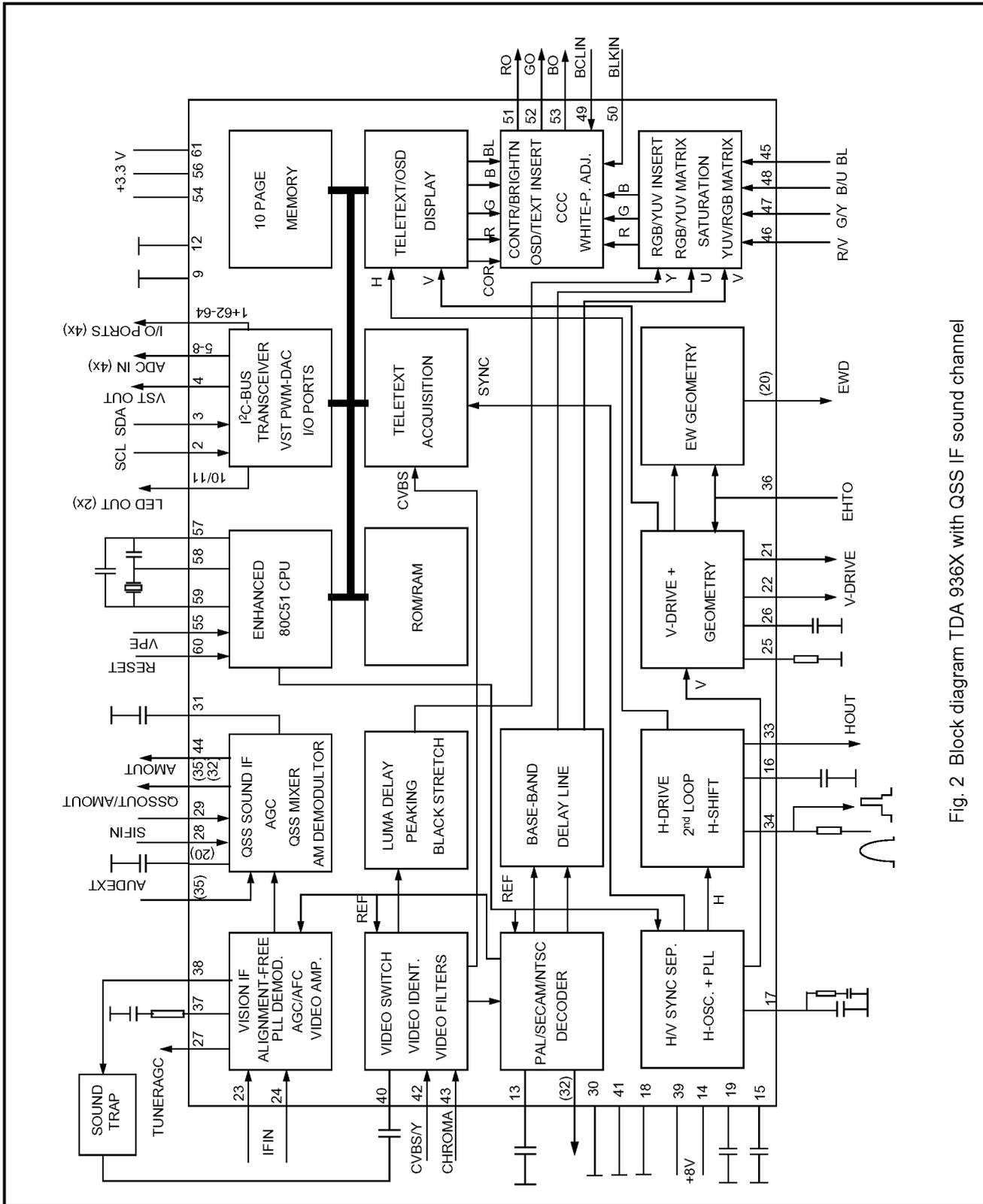


Fig. 2 Block diagram TDA 936X with QSS IF sound channel

TV signal processor-Teletext decoder with embedded  $\mu$ -Controller

TDA935X/6X/8X PS/N2 series

BLOCK DIAGRAM

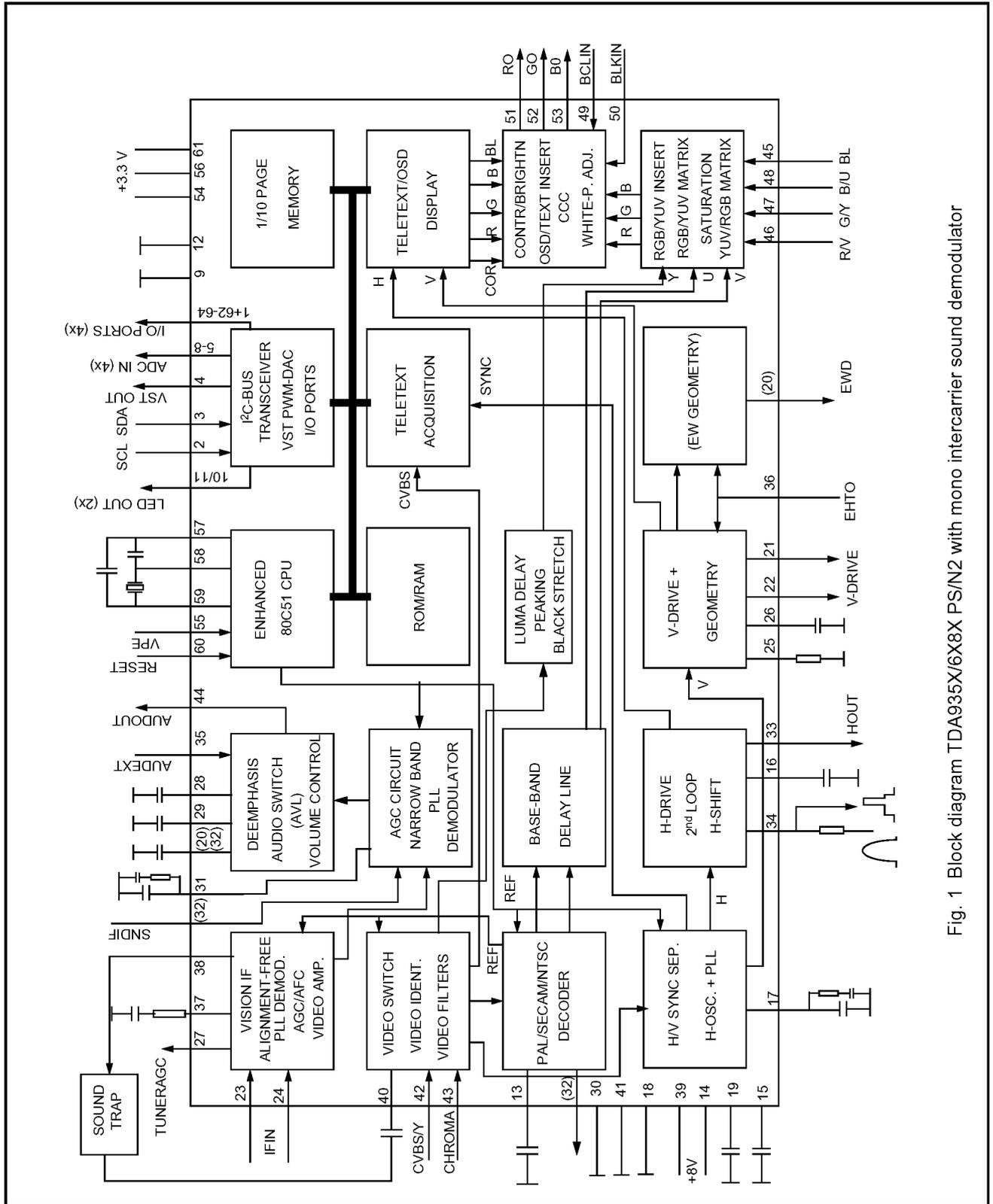


Fig. 1 Block diagram TDA935X/6X8X PS/N2 with mono intercarrier sound demodulator

TV signal processor-Teletext decoder with embedded  $\mu$ -Controller

TDA935X/6X/8X PS/N2 series

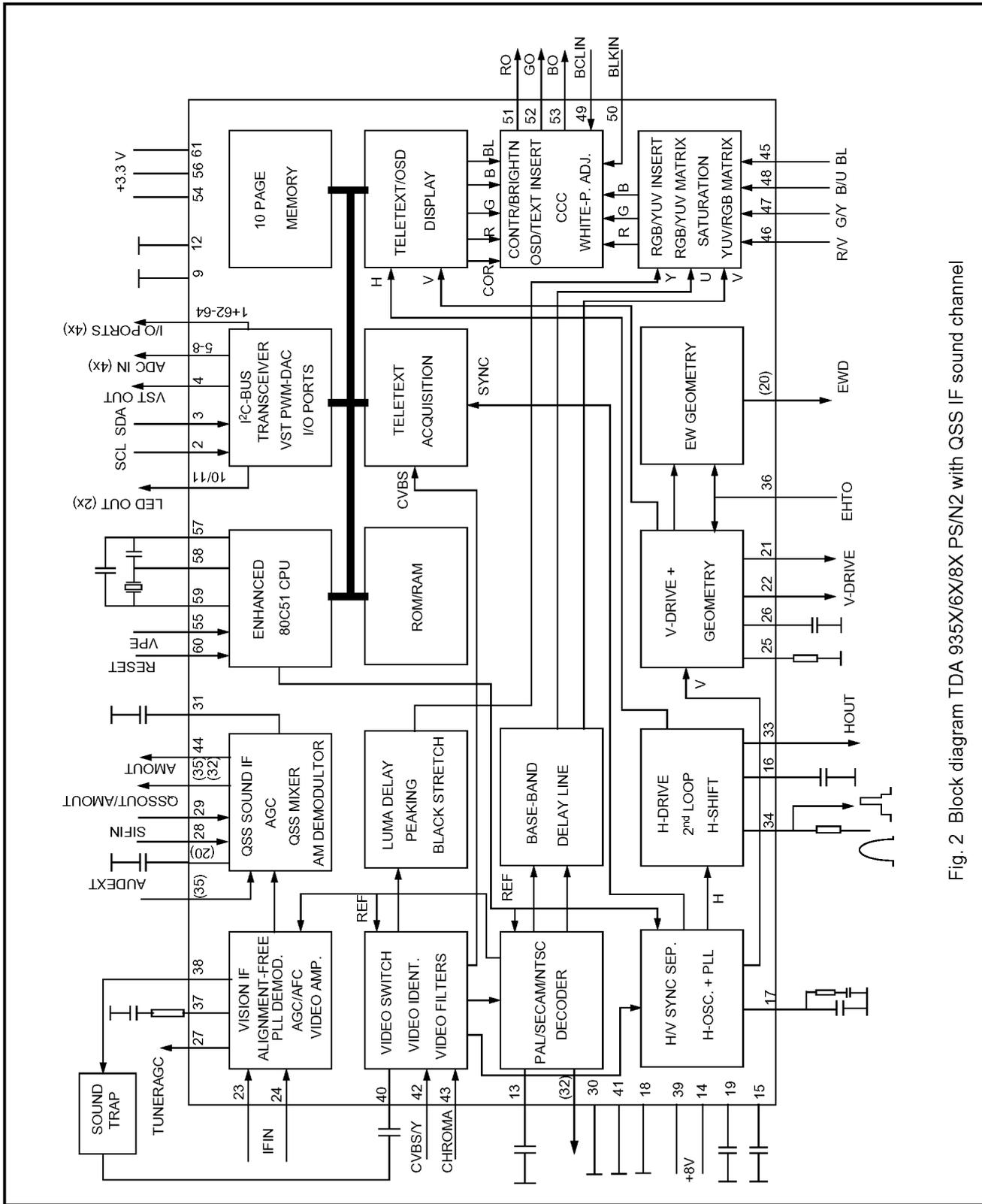


Fig. 2 Block diagram TDA 935X/6X/8X PS/N2 with QSS IF sound channel

TV signal processor-Teletext decoder with  
embedded  $\mu$ -Controller

## TDA935X/6X/8X PS/N2 series

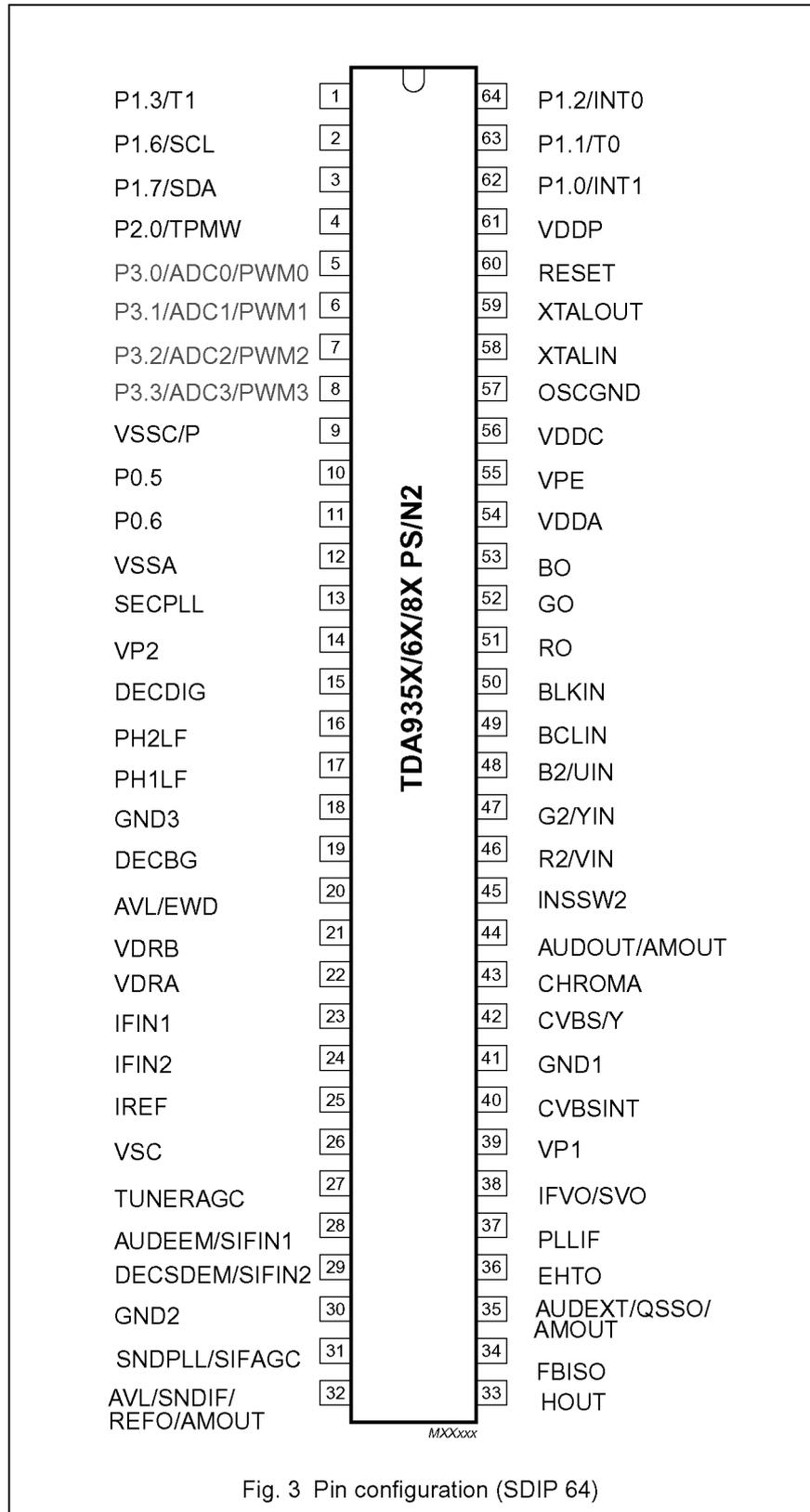
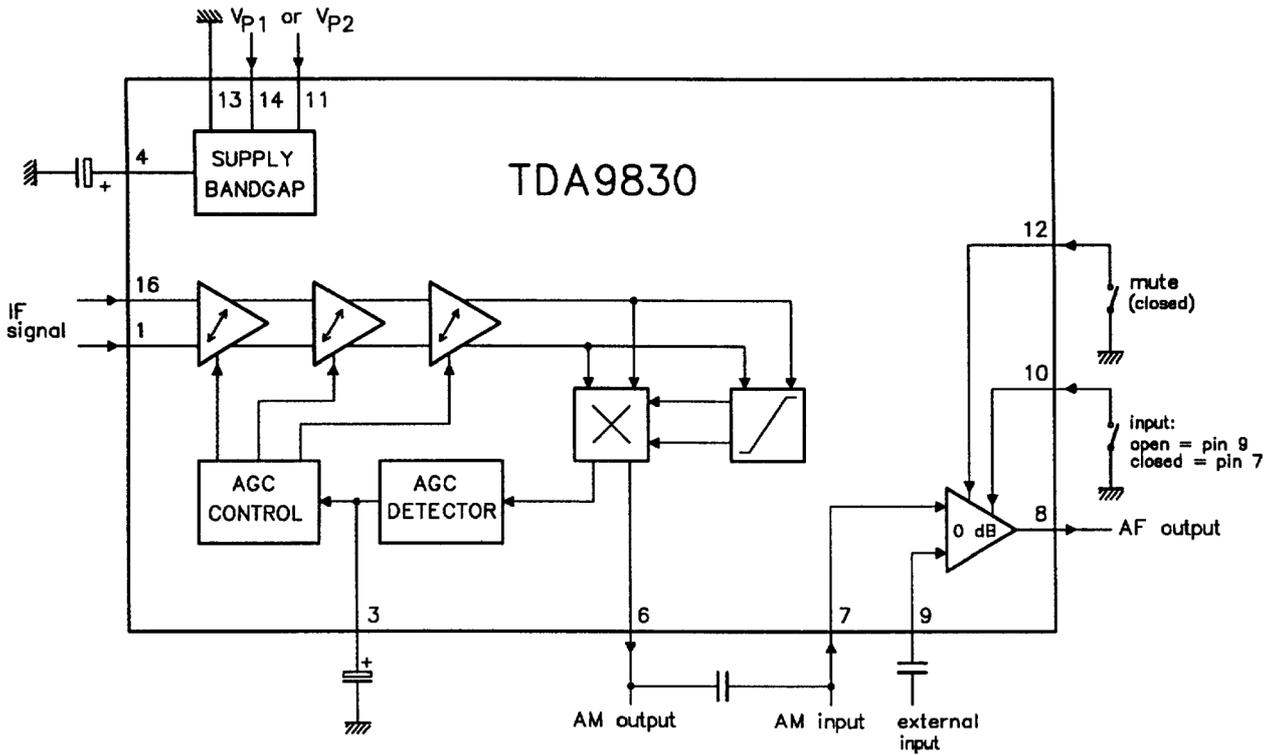


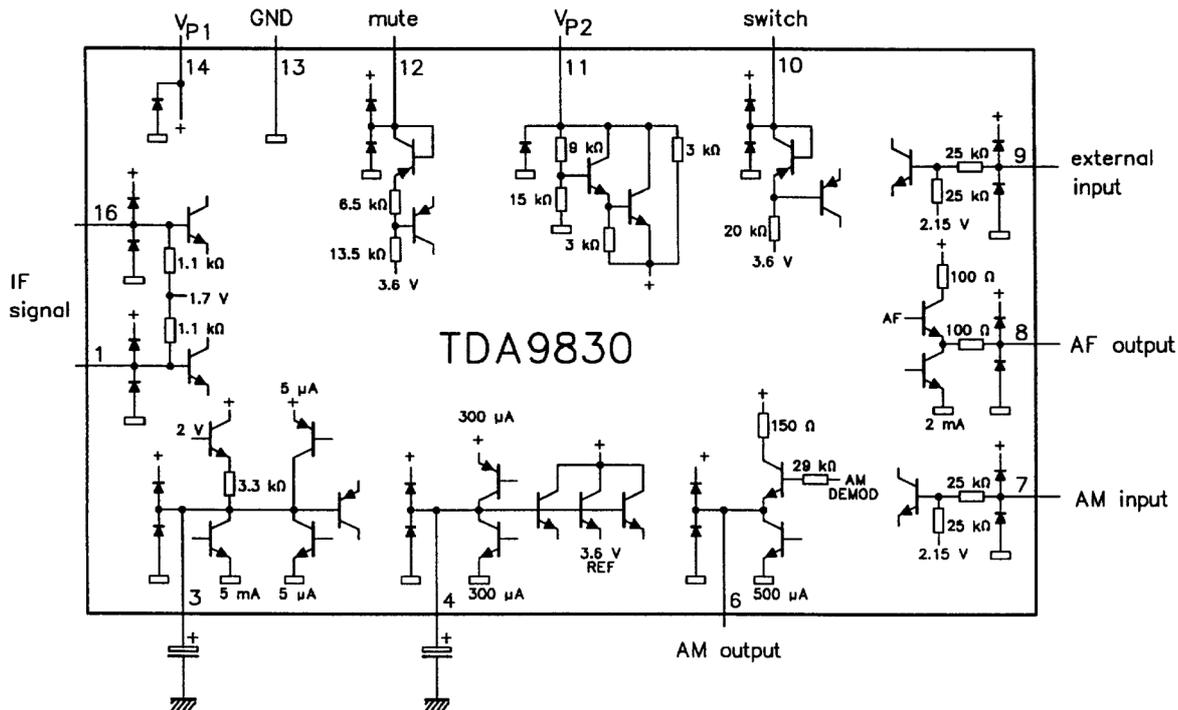
Fig. 3 Pin configuration (SDIP 64)

TV sound AM-demodulator and audio source switch

TDA9830



Block diagram.



Internal circuits.

## TV sound AM-demodulator and audio source switch

## TDA9830

## PINNING

SYMBOL	PIN	DESCRIPTION
IFIN	1	sound IF differential input signal
n.c.	2	not connected
C <sub>AGC</sub>	3	AGC capacitor
C <sub>REF</sub>	4	REF voltage filtering capacitor
n.c.	5	not connected
AMOUT	6	AM demodulator output
AMIN	7	input signal (from AM) to audio switch
AFOUT	8	output signal from audio switch
EXTIN	9	input signal (from external) to audio switch
V <sub>p2</sub>	11	supply voltage +12 V (alternative)
MUTE	12	mute control
GND	13	ground (0 V)
V <sub>p1</sub>	14	supply voltage +5 to +8 V
n.c.	15	not connected
IFIN	16	sound IF differential input signal

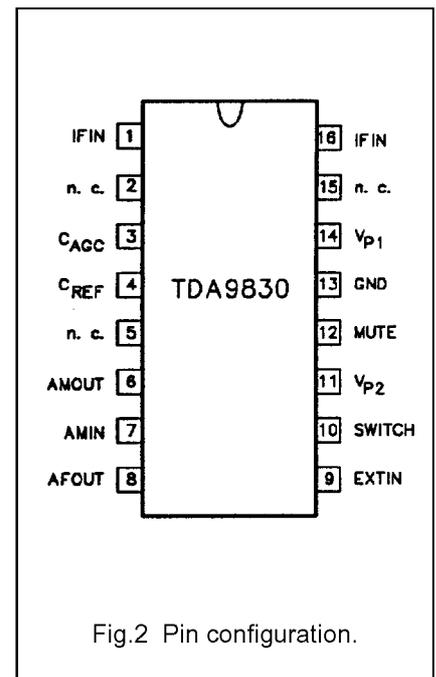


Fig.2 Pin configuration.

## FUNCTIONAL DESCRIPTION

## Sound IF input

The sound IF amplifier consists of three AC-coupled differential amplifier stages each with approximately 20 dB gain. At the output of each stage is a multiplier for gain controlling ( $\rightarrow$  current distribution gain control). The overall control range is approximately  $-6$  to  $+60$  dB and the frequency response ( $-3$  dB) of the IF amplifier is approximately 6 to 70 MHz. The steepness of gain control is approximately 10 mV/dB.

## IF AGC

The automatic gain control voltage to maintain the AM demodulator output signal at a constant level is generated by a mean level detector. This AGC-detector charges and discharges the capacitor at pin 3 controlled by the output signal of the AM-demodulator compared to an internal reference voltage. The

maximum charge/discharge current is approximately  $5 \mu\text{A}$ . This value in combination with the value of the AGC capacitor and the AGC steepness determines the lower cut-off audio frequency and the THD-figure at low modulation frequency of the whole AM-demodulator. Therefore a large time constant has to be chosen which leads to slow AGC reaction at IF level change. To speed up the AGC in case of IF signal jump from low to high level, there is an additional comparator built in, which can provide additional discharge current from the AGC capacitor up to 5 mA in a case of overloading the AM demodulator by the internal IF signal.

## AM-demodulator

The IF amplifier output signal is fed to a limiting amplifier (two stages) and to a multiplier circuit. However the limiter output signal (which is not any more AM modulated) is also fed to the multiplier, which provides AM

demodulation (in phase demodulation). After lowpass filtering ( $f_g \approx 400$  kHz) for carrier rejection and buffering, the demodulator output signal is present at pin 6. The AM demodulator operates over a wide frequency range, so that in combination with the frequency response of the IF amplifier applications in a frequency range from approximately 6 MHz up to 70 MHz are possible.

## Audio switch

This circuit is an operational amplifier with three input stages and internal feedback network determining gain (0 dB) and frequency response ( $f_g \approx 700$  kHz). Two of the input stages are connected to pin 7 and pin 9, the third input stage to an internal reference voltage. Controlled by the switching pins 10 and 12, one of the three input stages can be activated and a choice made between two different AF signals or mute state. The selected signal is present at

## 10. Spare Parts List

## Monoboard + CRT panel [A] [B]

## Various

A--E	0020 205 11220	Cable black 18cm
C--G	0020 205 11220	Cable black 18cm
FL01	0377 300 07771	Filter saw K9453M
FP01	0673 100 01831	Fuse T2.5A 250V 5X20MM
FP01	0751 102 11040	Fuse holder
FV06	0377 200 07821	Filter trap 6.0MHz
FV06	4822 242 10254	TPWA02B-TF21
FV07	0377 300 07821	Filter saw J1981M
FV07	0377 300 07991	Filter saw K2977M B/GD/K
KA41	0750 302 11011	2P vert.
KA42	0020 205 11130	Cable 2P Shielded 15cm
KA42	0020 920 00250	Cable 2P 25cm
KA42	0750 302 11011	2P vert.
KC03	0751 007 11031	7P flat
KD01	0751 002 01010	4P hor. male
KD01	0751 002 01110	4P hor. male 5x5x7.5
KD02	0750 302 11001	2P vert. 5mm
KD03	0020 920 00450	Cable 4P(3P) white 45cm
KD03	0020 920 00510	Cable 4P(3P) 45cm
KE01	0750 402 10051	Socket scart
KE04	0020 411 00460	Cable 3P 35cm
KE06	0020 411 00460	Cable 3P 35cm
KEMC	0020 205 11160	Cable black 30cm
KF01	0050 150 24140	Protective cinch
KF01	0750 164 20381	Cinch socket Y/ W
KP02	0751 002 11781	2P 7.5mm
KP03	0750 302 61010	2P vert. 10mm
KV01	0025 215 17140	Cable 6P white 50cm
KV01	0025 215 17160	Cable 6P 38cm
SC01	0811 011 14031	Tact switch hor.
SC02	0811 011 14031	Tact switch hor.
SC03	0811 011 14031	Tact switch hor.
SC04	0811 011 14031	Tact switch hor.
SW01	0810 000 00141	Mains switch
SY04	0750 208 00031	CRT socket Narrow neck
TU01	6168 000 20001	Tuner CTT5020E/CTF5510
XV01	0490 300 00091	Crystal 12.000 MHz

--||--

C004	0420 339 11011	3.3µF 250V
C004	0424 685 14791	6.8µF 250V
CA11	0400 670 41081	100nF 20% 50V 0805
CA51	0400 670 41081	100nF 20% 50V 0805
CA52	0424 492 54771	470µF 20% 25V
CA53	4822 126 13193	4.7nF 10% 63V
CA54	0424 165 01051	1µF 20% 50V
CA56	4822 126 14238	2.2nF 50V 0603
CA57	0400 440 81861	470nF 10% 16V 0603
CA58	0424 465 01061	10µF 20% 50V
CA68	4822 126 14238	2.2nF 50V 0603
CC70	0424 142 54761	47µF 20% 25V
CD01	0424 408 61061	10µF 20% 250V
CD02	6200 040 71031	10nF 10% 50V
CD03	5322 121 42661	330nF 5% 63V
CD06	0424 408 61061	10µF 20% 250V
CD08	6200 130 54741	470nF 5% 250V
CD08	6210 030 03351	330nF 5% 250V
CD10	0424 492 54771	470µF 20% 25V
CD11	6200 130 81041	100nF 5% 63V
CD13	0424 492 54771	470µF 20% 25V
CD14	0400 670 41081	100nF 20% 50V 0805
CD15	6210 040 04731	47nF 100V
CD16	0424 465 01061	10µF 20% 50V
CD17	6210 040 04731	47nF 100V
CD18	0400 401 74711	470pF 10% 2kV
CD19	0424 165 02261	22µF 20% 50V
CD20	6180 081 27211	7.2nF 1.6kV
CD20	6193 237 76821	6.8nF 2.5% 1.6kV
CD24	0424 492 54771	470µF 20% 25V
CD25	0400 670 41081	100nF 20% 50V 0805
CD26	0400 402 53311	330pF 250V
CD28	0424 166 32261	22µF 63V
CD29	0424 148 61051	1µF 20% 250V
CD30	0421 401 61071	100µF 20% 16V
CD31	0424 166 32261	22µF 63V
CD32	0400 401 56811	680pF 10% 1kV
CD51	5322 126 11578	1nF 10% 50V 0603
CD52	6200 130 81041	100nF 5% 63V
CD53	5322 126 11578	1nF 10% 50V 0603
CD54	0424 166 32261	22µF 63V
CD55	6200 040 01051	10nF 50V
CD56	6180 130 12231	22nF 50V
CD57	0424 492 54771	470µF 20% 25V

CD58	0421 401 61071	100µF 20% 16V
CD58	0424 462 55661	56µF 25V
CD59	4822 126 13883	220pF 5% 50V
CD61	0400 670 41081	100nF 20% 50V 0805
CD64	6200 130 81041	100nF 5% 63V
CD65	5322 126 11583	10nF 10% 50V 0603
CD66	0424 166 32261	22µF 63V
CE01	0424 465 01061	10µF 20% 50V
CE02	4822 126 14238	2.2nF 50V 0603
CE03	4822 126 14238	2.2nF 50V 0603
CE04	0400 402 53361	330pF 10% 50V 0603
CE15	5322 122 33861	120pF 10% 50V
CE16	5322 122 33861	120pF 10% 50V
CE17	0424 465 01061	10µF 20% 50V
CE18	0400 402 53361	330pF 10% 50V 0603
CE19	0400 402 53361	330pF 10% 50V 0603
CE20	4822 126 14238	2.2nF 50V 0603
CE21	4822 126 14238	2.2nF 50V 0603
CE27	4822 126 14238	2.2nF 50V 0603
CE28	4822 126 14238	2.2nF 50V 0603
CH01	0421 401 61071	100µF 20% 16V
CH02	0421 401 61071	100µF 20% 16V
CH05	0400 700 44731	47nF 50V
CH06	0400 700 44731	47nF 50V
CH07	0400 400 44721	4.7nF 10% 50V
CL02	0400 670 41081	100nF 20% 50V 0805
CL03	0424 485 04761	47µF 20% 50V
CL04	2020 552 93683	1.2nF 10% 50V 0603
CL05	0400 402 53361	330pF 10% 50V 0603
CL06	0421 401 61071	100µF 20% 16V
CL10	0407 430 22261	220nF 20-80% 50V 0603
CL11	0421 945 04751	4.7µF 20% 50V
CL12	0421 945 04751	4.7µF 20% 50V
CL13	0400 130 71041	100nF 100V
CL14	5322 126 11583	10nF 10% 50V 0603
CP01	6200 040 62241	220nF 20% 275V
CP02	6200 040 62241	220nF 20% 275V
CP03	0400 401 52211	2.2nF 10% 1kV
CP04	0400 401 52211	2.2nF 10% 1kV
CP05	6200 041 33331	33nF 5% 630V
CP06	0427 199 01071	100µF 20% 400V
CP08	0400 401 56811	680pF 10% 1kV
CP08	0400 401 72211	220pF 10% 2kV
CP09	0424 165 02261	22µF 20% 50V
CP10	5322 126 11583	10nF 10% 50V 0603
CP11	0400 310 42261	22pF 5% 50V 0603
CP12	0400 500 56861	680pF 5% 50V 0603
CP13	4822 126 14238	2.2nF 50V 0603
CP14	0400 402 02221	2.2nF 20% 400V
CP14	0402 587 64721	4.7nF 20% 400V
CP15	5322 126 11583	10nF 10% 50V 0603
CP16	0400 670 41081	100nF 20% 50V 0805
CP17	0424 402 51081	1000µF 20% 25V
CP18	0424 198 34761	47µF 20% 160V
CP21	0424 492 54771	470µF 20% 25V
CP22	0400 670 41081	100nF 20% 50V 0805
CP26	0424 165 02261	22µF 20% 50V
CP27	5322 126 11583	10nF 10% 50V 0603
CP28	0424 492 54771	470µF 20% 25V
CP29	0400 670 41081	100nF 20% 50V 0805
CP30	6200 040 72241	220nF 10% 63V
CP31	0424 142 54761	47µF 20% 25V
CP32	0400 670 41081	100nF 20% 50V 0805
CP34	0424 142 54761	47µF 20% 25V
CP35	0400 670 41081	100nF 20% 50V 0805
CP36	0400 501 51011	100pF 1kV
CP37	6200 050 76831	68nF 20% 275V
CP40	4822 051 30124	120k 5% 0.062W
CP44	0400 670 41371	1nF 20% 400V
CP45	0400 401 72221	2.2nF 2kV
CP46	0400 401 56811	680pF 10% 1kV
CP46	0400 401 72211	220pF 10% 2kV
CP47	0400 400 42261	22nF 20% 50V 0603
CT05	4822 126 11785	47pF 5% 50V 0603
CT06	4822 126 11785	47pF 5% 50V 0603
CT07	0424 142 54761	47µF 20% 25V
CT08	0400 670 41081	100nF 20% 50V 0805
CT09	0424 465 01061	10µF 20% 50V
CT14	0424 465 01061	10µF 20% 50V
CT17	0400 670 41081	100nF 20% 50V 0805
CV01	0424 465 01061	10µF 20% 50V
CV02	0407 320 82261	820pF 50V 0603
CV03	0400 670 41081	100nF 20% 50V 0805
CV05	4822 126 13193	4.7nF 10% 63V
CV06	0424 465 01061	10µF 20% 50V
CV07	0400 670 41081	100nF 20% 50V 0805
CV08	5322 126 11578	1nF 10% 50V 0603
CV10	0400 670 41081	100nF 20% 50V 0805
CV11	6210 040 04731	47nF 100V

CV12	0424 465 02251	2.2µF 20% 50V
CV13	0400 670 41081	100nF 20% 50V 0805
CV15	6210 030 04731	47nF 5% 50V
CV16	0421 401 61071	100µF 20% 16V
CV17	0400 670 41081	100nF 20% 50V 0805
CV18	0421 401 61071	100µF 20% 16V
CV19	6200 040 72241	220nF 10% 63V
CV20	6200 040 72241	220nF 10% 63V
CV21	0400 420 44861	47nF 10% 50V 0603
CV22	0400 420 44861	47nF 10% 50V 0603
CV23	0400 420 44861	47nF 10% 50V 0603
CV24	0424 171 63361	33µF 16V
CV24	0424 465 01061	10µF 20% 50V
CV25	5322 126 11579	3.3nF 10% 63V
CV26	5322 126 11583	10nF 10% 50V 0603
CV27	0421 401 61071	100µF 20% 16V
CV28	6200 130 81041	100nF 5% 63V
CV29	5322 126 11583	10nF 10% 50V 0603
CV30	2020 552 93683	1.2nF 10% 50V 0603
CV31	2020 552 93683	1.2nF 10% 50V 0603
CV32	0424 465 02251	2.2µF 20% 50V
CV33	4822 126 13193	4.7nF 10% 63V
CV34	0424 165 01051	1µF 20% 50V
CV35	4822 126 14238	2.2nF 50V 0603
CV36	0424 465 01061	10µF 20% 50V
CV37	0400 430 45661	56pF 5% 50V 0603
CV38	0400 430 45661	56pF 5% 50V 0603
CV39	0400 670 41081	100nF 20% 50V 0805
CV40	0400 670 41081	100nF 20% 50V 0805
CV41	0421 401 61071	100µF 20% 16V
CV42	0421 401 61071	100µF 20% 16V
CV43	0407 320 41081	100pF 5% 50V 0805
CV44	0407 320 41081	100pF 5% 50V 0805
CV45	0400 440 81861	470nF 10% 16V 0603
CV46	0424 465 02251	2.2µF 20% 50V
CV47	0407 320 41081	100pF 5% 50V 0805
CV48	0407 430 22261	220nF 20-80% 50V 0603
CV49	4822 126 11669	27pF
CV50	4822 126 13193	4.7nF 10% 63V
CV51	6200 040 04741	470nF 10% 50V
CV53	0424 165 01051	1µF 20% 50V
CV56	0421 401 61071	100µF 20% 16V
CV58	0424 165 01051	1µF 20% 50V
CV59	0400 420 44861	47nF 10% 50V 0603
CV61	4822 126 14241	330pF 50V 0603
CV62	4822 126 14241	330pF 50V 0603
CY01	0400 401 71021	1nF 10% 2kV
CY03	6210 041 33331	33nF 400V
CY04	0400 402 53361	330pF 10% 50V 0603
CY05	0400 402 53361	330pF 10% 50V 0603
CY06	0400 402 53361	330pF 10% 50V 0603
CY07	0424 468 62251	2.2µF 20% 250V
J137	0400 670 41081	100nF 20% 50V 0805

--WW--

J125	4822 051 30008	Jumper 0603
J126	4822 051 30008	Jumper 0603
J129	4822 051 30008	Jumper 0603
J134	4822 051 30008	Jumper 0603
J135	4822 051 30008	Jumper 0603
J136	4822 051 30008	Jumper 0603
J143	4822 051 30008	Jumper 0603
J148	4822 051 30008	Jumper 0603
J151	4822 051 30008	Jumper 0603
J160	4822 051 30008	Jumper 0603
J161	4822 051 30008	Jumper 0603
J165	4822 051 30008	Jumper 0603
JA03	4822 051 30008	Jumper 0603
JA55	4822 051 30008	Jumper 0603
JC01	4822 051 30008	Jumper 0603
JC03	4822 051 30008	Jumper 0603
JC05	4822 051 30008	Jumper 0603
JE01	4822 051 30008	Jumper 0603
JE02	4822 051 300	

RA57	0300 106 83061	2K 5% 1/10W 0603	RL15	4822 051 30222	2k2 5% 0.062W	RY07	0300 106 56221	5.6K 5% 1W fusable
RA57	4822 051 30222	2k2 5% 0.062W	RL22	4822 051 30223	22k 5% 0.062W	RY08	4822 051 30109	10Ω 5% 0.062W
RA58	0300 116 56261	5.1K 1/10W 0603	RL23	4822 051 30102	1k 5% 0.062W	RY09	0305 086 33321	33K 2W
RA58	4822 051 30562	5k6 5% 0.063W 0603	RL24	4822 051 30103	10k 5% 0.062W	RY10	0300 507 15221	1.5K 1/2W
RA59	4822 051 30152	1k5 5% 0.062W	RL25	4822 051 30109	10Ω 5% 0.062W	RY11	4822 051 30471	470Ω 5% 0.062W
RA59	4822 051 30332	3k3 5% 0.062W	RP01	0300 208 51031	NTC 5Ω	RY12	4822 051 30109	10Ω 5% 0.062W
RA60	0300 206 82011	82Ω 1/4W	RP01	0320 405 55211	5.6Ω 10% 5W	RY13	0300 106 82161	820Ω 5% 1/10W 0603
RA61	4822 051 30102	1k 5% 0.062W	RP02	4822 051 30333	33k 5% 0.062W	RY14	0305 086 33321	33K 2W
RC25	4822 051 30479	47Ω 5% 0.062W	RP03	4822 051 30682	6k8 5% 0.062W	RY15	0300 507 15221	1.5K 1/2W
RC26	4822 051 30223	22k 5% 0.062W	RP04	0300 206 10331	10K 5% 1/4W	RY16	0300 206 22131	220Ω 5% 1/4W
RC30	4822 051 30101	100Ω 5% 0.062W	RP05	0300 106 11231	1M 2% 1/4W	RY17	4822 051 30471	470Ω 5% 0.062W
RC42	4822 051 30332	3k3 5% 0.062W	RP06	0300 106 39231	3.9M 2% 1/4W	RY18	4822 051 30109	10Ω 5% 0.062W
RC46	4822 051 30332	3k3 5% 0.062W	RP07	0300 206 15011	15Ω 5% 1/4W	RY19	0300 106 82161	820Ω 5% 1/10W 0603
RC47	4822 051 30101	100Ω 5% 0.062W	RP07	0300 206 47031	47Ω 5% 1/4W	RY20	0300 507 15221	1.5K 1/2W
RC52	4822 051 30101	100Ω 5% 0.062W	RP08	4822 117 12925	47k 1% 0.063W 0603	RY21	0305 086 33321	33K 2W
RC58	4822 051 30103	10k 5% 0.062W	RP09	0300 506 47611	4.7M 5% 1/2W	RY22	0300 206 22131	220Ω 5% 1/4W
RC59	4822 051 30103	10k 5% 0.062W	RP10	0305 086 33311	33K 5% 5W	RY23	0300 206 15431	150K 5% 1/4W
RC60	4822 051 30103	10k 5% 0.062W	RP10	0320 406 33521	33K 5W	RY24	0300 206 22511	2.2M 5% 1/4W
RC71	0300 106 15161	150Ω 5% 1/10W 0603	RP11	0300 206 15011	15Ω 5% 1/4W	RY25	0300 206 22511	2.2M 5% 1/4W
RC72	5322 117 13052	2k7 1% 0.063W 0603	RP17	0300 206 10331	10K 5% 1/4W	VAP1	6113 800 12021	Potm. 2k 0.1W 30%
RC73	4822 051 30561	560Ω 5% 0.062W	RP18	4822 051 30103	10k 5% 0.062W			
RC74	4822 051 30391	390Ω 5% 0.062W	RP21	4822 051 30472	4k7 5% 0.062W			
RC75	0300 106 82161	820Ω 5% 1/10W 0603	RP22	4822 051 30102	1k 5% 0.062W			
RC76	4822 051 30102	1k 5% 0.062W	RP31	0320 405 55211	5.6Ω 10% 5W			
RC77	0300 106 12261	1.2K 5% 1/10W 0603	RT07	5322 117 13042	3K9 1% 0.063W 0603	J003	6087 800 02411	Ferrite bead 3.5*9*0.8
RC79	4822 051 30561	560Ω 5% 0.062W	RT08	4822 051 30153	15k 5% 0.062W	J007	6087 800 02411	Ferrite bead 3.5*9*0.8
RC90	4822 117 13632	100k 1% 0.063W 0.62W	RT09	4822 051 30183	18k 5% 0.062W	JA54	6087 800 02411	Ferrite bead 3.5*9*0.8
RC91	4822 117 12902	8k2 1% 0.063W 0603	RT14	0300 206 10131	100Ω 5% 1/4W	JV12	6087 800 02411	Ferrite bead 3.5*9*0.8
RD01	4822 051 30273	27k 5% 0.062W	RT15	0300 206 10131	100Ω 5% 1/4W	JV13	6087 800 02411	Ferrite bead 3.5*9*0.8
RD02	0300 206 15131	150Ω 5% 1/4W	RT17	4822 051 30008	Jumper 0603	LD01	6083 800 00101	Coil choke 110μH 15%
RD03	5322 117 13068	82Ω 1% 0.063W 0603	RT18	4822 051 30223	22k 5% 0.062W	LD02	6089 800 04051	Linearity coil 50μH
RD04	4822 117 13632	100k 1% 0.063W 0.62W	RV01	4822 051 30332	3k3 5% 0.062W	LE02	6080 800 00191	8.2μH 5%
RD05	0300 256 15001	15Ω 1/4W fusable	RV02	4822 051 30391	390Ω 5% 0.062W	LE05	6089 800 00101	12μH 5%
RD06	0300 506 10311	10K 1/2W	RV03	0300 106 15161	150Ω 5% 1/10W 0603	LE06	6089 800 00101	12μH 5%
RD07	0300 506 39311	39Ω 1/4W	RV04	0300 206 10131	100Ω 5% 1/4W	LFP1	6089 800 03151	Line filter 2*27MHz
RD08	0300 206 18231	1.8K 1/4W	RV05	4822 051 30101	100Ω 5% 0.062W	LH01	6080 000 00221	10μH 5%
RD09	0300 206 15431	150K 5% 1/4W	RV06	5322 117 13061	180Ω 1% 0.063W 0603	LH03	6080 000 00041	10μH 5%
RD10	0300 206 15431	150K 5% 1/4W	RV09	0300 106 12261	1.2K 5% 1/10W 0603	LH04	6080 000 00041	10μH 5%
RD14	4822 117 12925	47k 1% 0.063W 0603	RV11	4822 051 30101	100Ω 5% 0.062W	LP02	6083 800 02361	Coil choke 150μH
RD15	4822 051 30102	1k 5% 0.062W	RV12	5322 117 13061	180Ω 1% 0.063W 0603	LP03	6087 800 02411	Ferrite bead 3.5*9*0.8
RD16	0300 206 47911	4.7Ω 1/4W	RV13	4822 051 30103	10k 5% 0.062W	LP04	6080 000 00301	Coil choke 900Ω 50MHz
RD17	0300 206 56231	5.6K 1/4W	RV14	4822 051 30101	100Ω 5% 0.062W	LP05	6087 800 02411	Ferrite bead 3.5*9*0.8
RD17	0300 206 68211	6.8K 1/4W	RV15	4822 051 30101	100Ω 5% 0.062W	LT01	6080 800 00751	22μH
RD18	0300 106 56221	5.6K 5% 1W fusable	RV16	4822 051 30101	100Ω 5% 0.062W	LT02	6089 800 00111	1μH 5%
RD19	0301 086 15511	0.22Ω 5% 1W	RV17	4822 051 30103	10k 5% 0.062W	LV01	6080 000 00021	10μH 5%
RD20	0300 206 10231	1K 5% 1/4W	RV18	0300 106 82161	820Ω 5% 1/10W 0603	LV02	6080 000 00021	10μH 5%
RD21	0300 106 15161	150Ω 5% 1/10W 0603	RV18	4822 051 30102	1k 5% 0.062W	LV02	6080 800 00161	6.8μH
RD50	0300 206 10131	100Ω 5% 1/4W	RV19	4822 051 30152	1k5 5% 0.062W	LV03	6080 000 00021	10μH 5%
RD51	0300 206 10131	100Ω 5% 1/4W	RV20	0300 106 15161	150Ω 5% 1/10W 0603	LV04	6080 000 00021	10μH 5%
RD52	4822 051 30332	3k3 5% 0.062W	RV20	4822 051 30271	270Ω 5% 0.062W	LV05	6080 000 00021	10μH 5%
RD53	0300 557 22811	0.22Ω 5% 1/2W fusable	RV21	4822 051 30681	680Ω 5% 0.062W	LV06	6080 000 00021	10μH 5%
RD54	0301 086 18911	1.8Ω 1W	RV22	4822 051 30393	39k 5% 0.062W	WD01	6023 000 33071	Transf. hor. drive
RD56	0300 256 82011	82Ω 1/4W fusable	RV23	4822 051 30563	56k 5% 0.062W	WD02	6042 000 01591	LOT non bleeder
RD57	0300 596 22211	220Ω 1W	RV24	4822 051 30101	100Ω 5% 0.062W	WD02	6042 000 01661	LOT bleeder
RD58	0300 206 22011	22Ω 1/4W	RV25	4822 051 30273	27k 5% 0.062W	WP02	6021 900 00871	Transf. supply
RD59	4822 051 30333	33k 5% 0.062W	RV26	0300 106 75461	750K 5% 1/10W 0603			
RD61	4822 051 30008	Jumper 0603	RV27	4822 051 30153	15k 5% 0.062W			
RD61	4822 051 30103	10k 5% 0.062W	RV28	4822 051 30101	100Ω 5% 0.062W			
RD62	5322 117 13039	220K 1% 0.063W 0603	RV29	4822 051 30479	47Ω 5% 0.062W			
RD63	4822 051 30221	220Ω 5% 0.062W	RV30	0300 206 47131	470Ω 5% 1/4W	D002	4822 130 30842	BAV21
RD64	0300 556 68811	0.68Ω 1/2W fusable	RV31	4822 051 30333	33k 5% 0.062W	D004	0483 214 23201	1N4007
RD65	0300 556 68811	0.68Ω 1/2W fusable	RV32	4822 051 30332	3k3 5% 0.062W	DC03	4822 130 83351	BZX55-B2V4
RD66	0300 556 68811	0.68Ω 1/2W fusable	RV33	0300 106 12261	1.2K 5% 1/10W 0603	DC10	0487 738 09001	KLR114L
RE01	4822 051 30101	100Ω 5% 0.062W	RV35	0300 106 12261	1.2K 5% 1/10W 0603	DD01	4822 130 42606	BYD33J
RE02	4822 051 30101	100Ω 5% 0.062W	RV35	0300 106 12261	1.2K 5% 1/10W 0603	DD02	4822 130 30621	1N4148
RE03	0300 106 47961	4.7Ω 5% 1/10W 0603	RV36	4822 051 30008	Jumper 0603	DD03	4822 130 42606	BYD33J
RE04	4822 051 30759	75Ω 5% 0.062W	RV36	4822 051 30333	33k 5% 0.062W	DD04	4822 130 42606	BYD33J
RE05	4822 051 30102	1k 5% 0.062W	RV39	4822 051 30008	Jumper 0603	DD06	4822 130 42606	BYD33J
RE06	4822 051 30101	100Ω 5% 0.062W	RV41	4822 051 30008	Jumper 0603	DD09	4822 130 30621	1N4148
RE07	4822 051 30759	75Ω 5% 0.062W	RV48	4822 051 30101	100Ω 5% 0.062W	DD10	0480 000 00021	BYV95C
RE08	4822 051 30759	75Ω 5% 0.062W	RV50	4822 051 30153	15k 5% 0.062W	DD11	4822 130 30621	1N4148
RE09	4822 051 30759	75Ω 5% 0.062W	RV52	5322 117 13052	2k7 1% 0.063W 0603	DD12	4822 130 42606	BYD33J
RE10	4822 051 30101	100Ω 5% 0.062W	RV53	4822 051 30101	100Ω 5% 0.062W	DD13	4822 130 31983	BAT85
RE11	5322 117 13042	3K9 1% 0.063W 0603	RV54	4822 051 30101	100Ω 5% 0.062W	DD14	4822 130 34382	BZX79-B8V2
RE12	4822 051 30103	10k 5% 0.062W	RV55	4822 051 30101	100Ω 5% 0.062W	DD15	4822 130 30621	1N4148
RE13	4822 051 30101	100Ω 5% 0.062W	RV56	0300 206 10031	10Ω 1/4W	DD50	4822 130 30621	1N4148
RE14	4822 051 30123	12k 5% 0.062W	RV57	0300 106 12261	1.2K 5% 1/10W 0603	DE01	4822 130 30621	1N4148
RE16	4822 051 30759	75Ω 5% 0.062W	RV58	0301 406 12211	1.2k 5% 1/6W	DL03	4822 130 31983	BAT85
RE17	4822 051 30123	12k 5% 0.062W	RV59	4822 051 30223	22k 5% 0.062W	DL04	4822 130 31983	BAT85
RH01	0300 206 10131	100Ω 5% 1/4W	RV62	4822 051 30759	75Ω 5% 0.062W	DP01	0483 214 23201	1N4007
RL01	4822 117 12925	47k 1% 0.063W 0603	RV63	0300 116 10361	1M 1/10W 0603	DP02	0483 214 23201	1N4007
RL02	4822 051 30152	1k5 5% 0.062W	RV64	4822 051 30682	6k8 5% 0.062W	DP03	0483 214 23201	1N4007
RL03	4822 117 12925	47k 1% 0.063W 0603	RV65	4822 051 30682	6k8 5% 0.062W	DP04	0483 214 23201	1N4007
RL04	4822 051 30152	1k5 5% 0.062W	RV66	4822 051 30152	1k5 5% 0.062W	DP06	0480 000 00021	BYV95C
RL05	4822 117 12925	47k 1% 0.063W 0603	RV67	4822 117 12902	8k2 1% 0.063W 0603	DP07	4822 130 30621	1N4148
RL06	4822 051 30103	10k 5% 0.062W	RV68	4822 117 13632	100k 1% 0.063W 0.62W	DP08	0480 000 00021	BYV95C
RL07	4822 117 12925	47k 1% 0.063W 0603	RV69	4822 051 30563	56k 5% 0.062W	DP09	4822 130 30959	ZTK33B
RL08	4822 051 30102	1k 5% 0.062W	RV72	4822 051 30101	100Ω 5% 0.062W	DP11	0480 000 00021	BYV95C
RL09	4822 051 30222	2k2 5% 0.062W	RV73	0300 106 12261	1.2K 5% 1/10W 0603	DP13	0480 000 00021	BYV95C
RL10	4822 117 12925	47k 1% 0.063W 0603	RV74	0300 116 47461	470K 1/10W 0603	DP17	0480 000 00021	BYV95C
RL11	4822 051 30472	4k7 5% 0.062W	RY01	0300 507 15221	1.5K 1/2W	DT01	4822 130 30621	1N4148
RL12	4822							

DY04	4822 130 30842	BAV21
DY05	4822 130 30842	BAV21
DY06	4822 130 30842	BAV21
DY07	0483 214 23201	1N4007



I001	9352 713 37112	TDA6107JF/N3
IA50	0450 000 00971	TDA7056A/N2
IC02	0450 000 02401	M24C16-WBN6
IC04	6093 300 01231	PREAMPLIFIER TUTUCULU PHLP2236
ID50	0451 900 00051	TDA8356/N6
ID50	0451 900 00151	TDA8357J
IL01	0450 000 00861	TDA9830/V1
IP01	0451 900 00021	TDA16846
IP02	4822 209 15576	LE33CZ
IP04	0452 381 03081	LM7805
IV01	0450 000 01801	TDA9353 PS/N2/3I
IV01	0450 000 05891	TDA9351-PM1 P/S/NTSC 90DEG1P
IV01	0450 000 09791	TDA9351-PI1 P/S/NTSC 90DEG1P
QY01	4822 130 41782	BF422
QY02	4822 130 41646	BF423
QY03	4822 130 41782	BF422
QY04	4822 130 41782	BF422
QY05	4822 130 41646	BF423
QY06	4822 130 41782	BF422
QY07	4822 130 41782	BF422
QY08	4822 130 41646	BF423
QY09	4822 130 41782	BF422
TA01	4822 130 40959	BC547B
TC10	4822 130 40959	BC547B
TC11	4822 130 41691	BC556B
TC14	4822 130 41691	BC556B
TC70	4822 130 40959	BC547B
TC90	4822 130 41691	BC556B
TD01	4822 130 41053	BC639
TD02	0460 000 00141	BU2508DF
TD03	4822 130 40959	BC547B
TD04	4822 130 40855	BC337
TD50	4822 130 41691	BC556B
TE01	4822 130 40959	BC547B
TL01	4822 130 40959	BC547B
TL02	4822 130 40959	BC547B
TL03	4822 130 40959	BC547B
TL04	4822 130 40959	BC547B
TL05	4822 130 41691	BC556B
TP01	0467 110 00031	SPA04N60C2
TP03	0469 862 94161	2SA720 / BC327
TP05	4822 130 40959	BC547B
TV01	4822 130 41691	BC556B
TV03	4822 130 40959	BC547B
TV04	4822 130 40959	BC547B
TV11	4822 130 40959	BC547B