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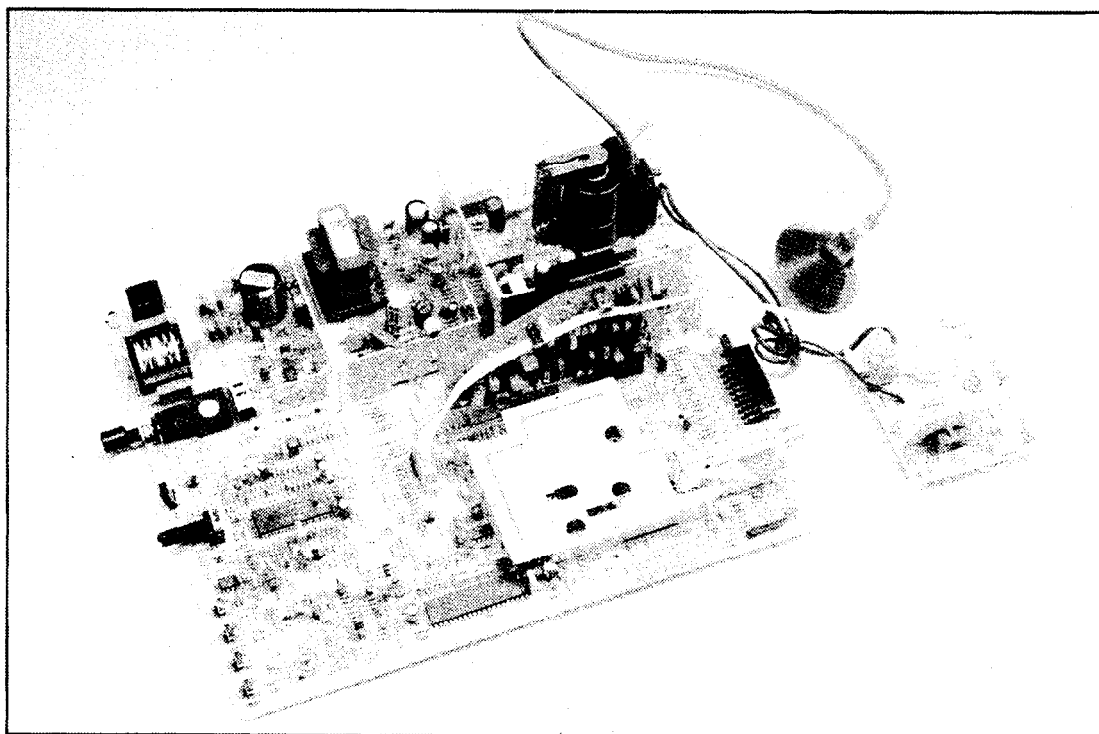
# **SERVICE MANUAL**

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**PT-11 CHASSIS**

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# **AKAI**



## **TV-1411TGB**

## **TV-2111TGB**

## PT-11 CHASSIS ADJUSTMENT PROCEDURE

### 1- System Voltage (+B) Adjustment :

- Before switching on TV, all potentiometers should be adjusted at medium level. Then TV is switched on;
- Adjust all of the analog parameters to minimum with RC
- Adjust P1 trimpot until find +115 V on the cathode of D2 diode

### 2- AFT Adjustment:

- Place a balloon coil (300 Ohm dc resistance ) parallel to L104
- Apply 80 dB uV 38.9 MHz (39.5 MHz for I ) signal via balloon coil
- Connect a voltmeter to aft pin (pin 9) of IC301
- Adjust T101 coil until the voltage of this pin being 2.5 V dc

### 3- Adjustment of G2:

- Apply Philips Test pattern
- Adjust all of the analog parameters to minimum with RC
- Adjust G2 trimpot until seeing two bars on gray scale

### 4- Horizontal and Vertical Adjustment:

- Apply Philips Test pattern signal
- Center the picture horizontally while picture shifting to right and left with P101,
- Make vertical amplitude adjustment with P602 until seeing top and lower lines of picture will be seen
- Center the picture with P601

### 5- AGC Adjustment:

- Apply Philips Test Pattern whose amplitude is 60 dB uV to the rf input
- Adjust P102 until find a picture without snowy

### 6- Focus Adjustment:

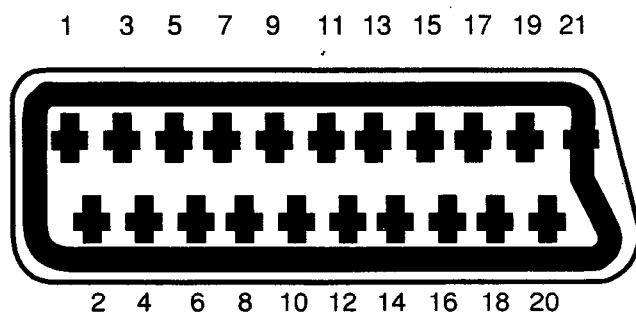
- Apply Cross-Hatch Pattern signal
- Find the optimum concentration point between H and V intersection in the middle of screen.

### 7- White Balance Adjustment :

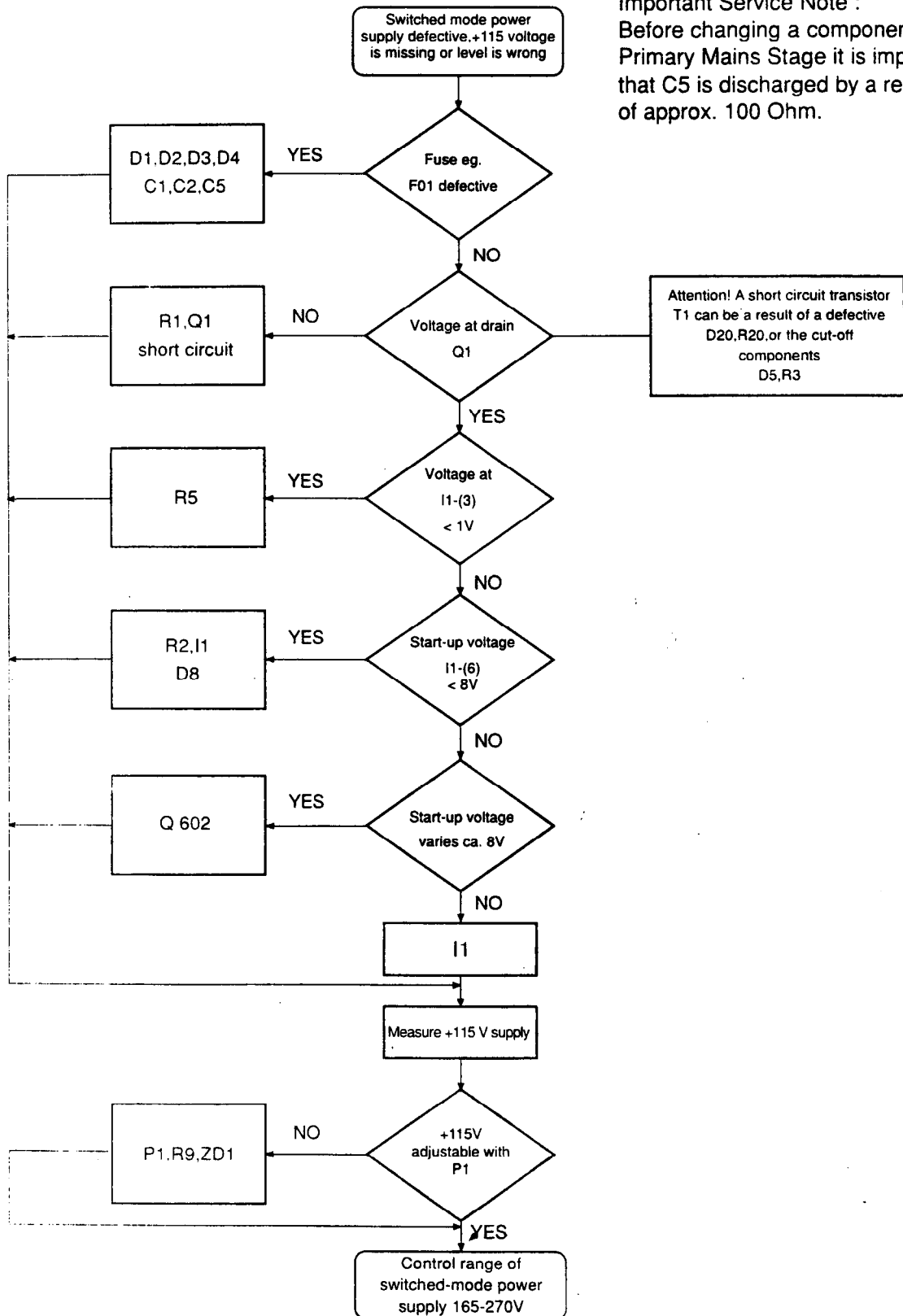
- Apply Philips Test Pattern signal
- Adjust all of the trimpots on CRT board to medium level
- Adjust color, contrast, brightness to minimum by RC
- Adjust G2
- Apply white pattern, settle in the probe of color analyzer to screen
- Increase brightness until getting Y=10 nits
- Adjust x=270 - 276 nits y=270 - 276 nits via "VR201, VR203, VR205"
- Increase brightness and contrast until Y=90 - 100 nits
- Adjust x, y to same values via "VR202 and VR204"
- Check white balance at high and low contrast level. Again make adjustment if it's necessary.

## SPECIFICATIONS OF THE CONNECTOR (EURO SCART)

- 1- Audio output 1. right channel 0.5 VRMS/ $<1\text{ k}\Omega$
- 2- Audio input 1. right channel 0.5 VRMS (connected to No.6)
- 3- Audio output 2. left channel 0.5 VRMS (connected to No.1)
- 4- GND (audio)
- 5- GND
- 6- Audio input 2. left channel 0.5 VRMS/ $>10\text{ k}\Omega$
- 7- RGB input, blue (B)
- 8- Switch signal video (status)
- 9- GND
- 10- Reserved for clock signals (not connected)
- 11- RGB input, green (G)
- 12- Reserved for remote control (not connected)
- 13- GND
- 14- GND switch signal RGB
- 15- RGB input, red (R)
- 16- Switch signal RGB
- 17- GND (video)
- 18- GND
- 19- Video output 1 Vpp/75 ohm
- 20- Video input 1 Vpp/75 ohm
- 21- Shield



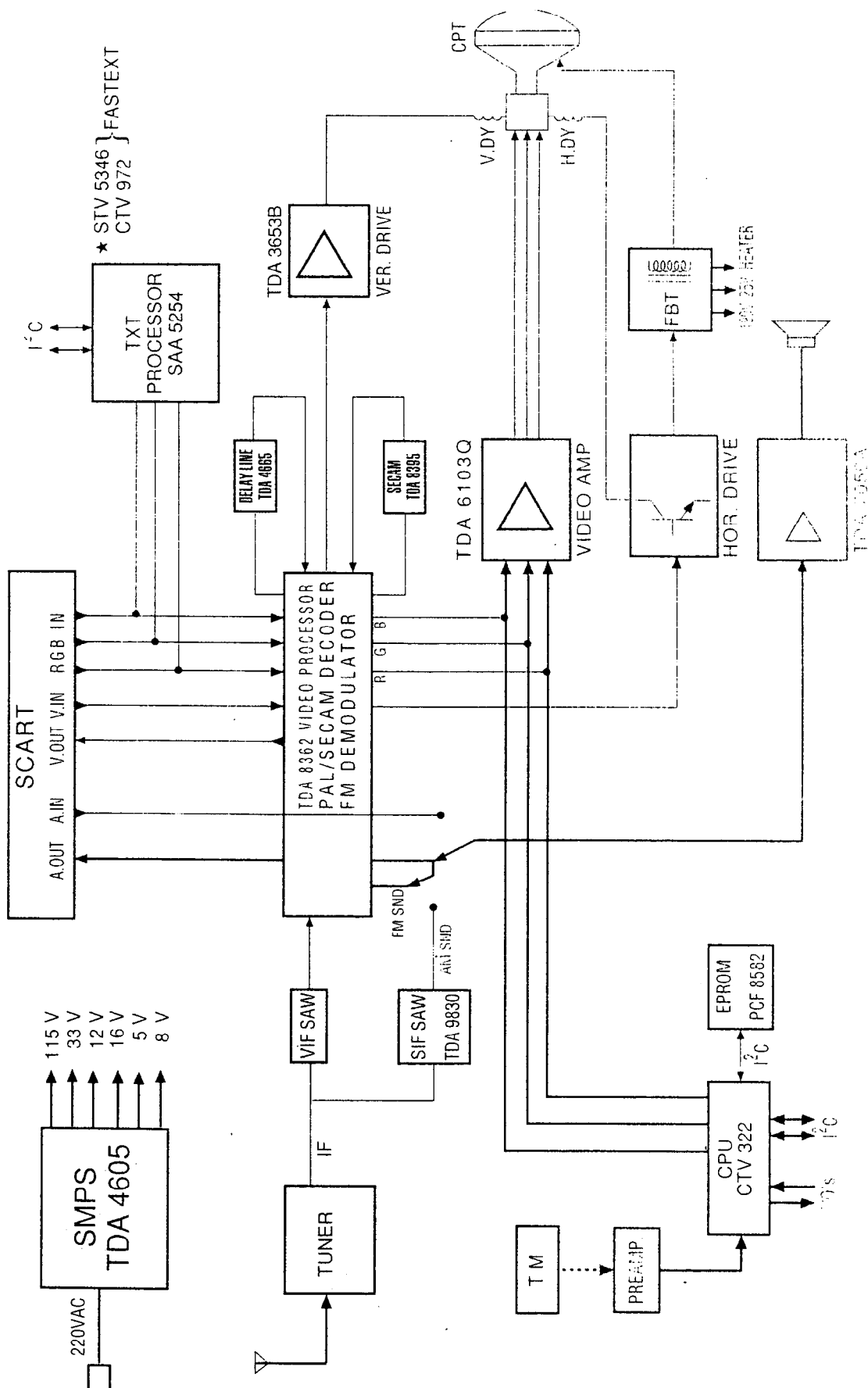
## FAULT TRACING DIAGRAM-POWER SUPPLY



## TROUBLESHOOTING GUIDE FOR MAIN PCB

TROUBLE	CHECK POINTS
No color	I101, T102, C127, I102, check pin 38-SSC
No vertical deflection	Check +K, I601, pin 42 I401, pin 43 I401
Vertical linearity	C 625, R 623
Vertical size	C 625, R 624
Vertical shift	R 626, P 601
Horizontal linearity	L 601, C 608
Horizontal size	+B, C 607, L 602
Flue picture	I101 pin 25, ABL, FOCUS, HEATER, EHT
Dark picture	I101 pin 17, SCREEN, EHT, +M
Noise picture	TU01, AGC, IF, FI101
Vert./horizontal synchrony	I401
Interference	TU01, IF, FI101
No sound	Check I101 pin 5 and pin 50, I401 pin 3, pin 5, +G
Low sound	I101 pin 5, pin 50, I401 pin 5, +G, R 403
Sound distortion	I401, +G, R 403
Contrast	I301 pin 5, I101 pin 25, ABL
Brightness	I301 pin 3, I101 pin 17
Color saturation	I301 pin 4, I101 pin 26
Tuning	I301 pin 1, Q 301, +D, TU01
Memory	I 302, I 301, SDA, SCL
Band select	I 301 pin 7/8, I 303, +K, TU01
No video-out on the SCART	Check TV-VID signals, Q 651
No video-in on the SCART	Check I301 pin 12, I101 pin 16 on AV mode, check the video signals on AV mode SCART pin 20 and I101 pin 15
No sound out on the SCART	I101 pin 1, Q 653, Q654
No sound in on the SCART	Check the audio signals on SCART pin 2/6 and I101 pin 6
No remote control reception	Check signals on pin 3 IR01 and I301 pin 35

# PT-11 CHASSIS BLOCK DIAGRAM (MONO)



## DESCRIPTONS OF THE PARTS

### 1- SWITCH MODE POWER SUPPLY STAGE

In order to supply the DC voltage required at various parts of the chassis, a SMPS transformer controlled by the IC TDA 4605 and switching transistor 3N90 is used. C1, EM1, C2 filter circuit prevents the network noises and the effects of high frequency which produced in TV set. After rectifying DC voltage is filtered by using C5. The stat up voltage of TDA4605 is obtained from R2 at the same time a square wave is produced from pin 5 of IC TDA4605. This square wave reaches Q1 passing through R8. After that Q1 forms an induction on TR1, which produces a voltage on pin 6. This voltage rectified by D6 is used as a supply voltage of IC 1. IC 1 does not operate SMPS by stopping pulses at pin 5, when the network is higher or lower than fixed limits. Pin 2 is control pin of overload. This stage produces 115V for FBT, 12V for audio part, 33 V for tuning circuit 5V, 12V (tuner and some ICs) and 8V (for TDA8362) are produced by the means of the regulators LM7805, LM317 and LM7808. This circuit operates between 165 VAC and 250VAC (50Hz).

### 2- MICROCONTROLLER STAGE

Below items are controlled or generated by means of these controllers.

- CTV 322S V2.0 (for mono models) and CTV 352S V1.4 (for stereo models) are used as controller on PT chassis.
- Voltage synthesis tuning
- On screen display
- Control of two transmission standard
- Controls of the simple text or fasttext decoder
- Full peri-TV (scart) switching and double scart switching on stereo models,
- Controls of stereo decoder TDA 9840 as German Stereo Decoder
- SAA 7283 as Nicam decoder
- Sound processing (Bass, treble, balance)
- Controls of the analog values of the picture (Brightness, Color, Contrast)

### 3- ANALOG OPERATION PART WITH TDA 8362

TDA8362 is a single-chip TV processor which contains nearly all small signal functions that are required for color television receiver. For a complete receiver the following circuits need to be added: a base-band delay line (TDA4665) a tuner and output stages for audio, video and horizontal and vertical deflection. TDA8362 can handle signals with positive modulation and it supplies the signals which are required for secam decoder TDA8395.

#### VIDEO IF AMPLIFIER

The IF amplifier contains 3 AC-coupled control stages with a total gain control range of greater than 60 dB. The reference carrier for the video demodulator is obtained by means of passive regeneration of the picture carrier. The external reference tuned circuit is the only remaining adjustment of the IC.

In the TDA8362 the polarity of the demodulator can be switched so that the circuit is suitable for both positive and negative modulated signals. The AFC circuit is driven with the same reference signal as the video demodulator. To ensure that the video content does not disturb the AFC operation a sample and hold circuit is incorporated: the capacitor for this function is internal. The AFC output voltages 6V. The AGC detector operates on levels, top sync for negative modulated and top white for positive modulated signals. The AGC detector time constant capacitor is connected externally.



## **SOUND IF CIRCUIT**

### **On mono models;**

The sound bandpass and trap filters have to be connected externally. The filtered intercarrier signal is fed to a limiter circuit and is demodulated by means of PLL demodulator. The PLL circuit tunes itself automatically to the incoming signal, consequently, no adjustment is required.

The volume is DC controlled. The composite audio output signal has an amplitude of 700 mV RMS at a volume control setting of -6 dB. The de-emphasis capacitor has to be connected externally. The non-controlled audio signal can be obtained from pin 1 via a buffer stage. The amplitude of this signal is 350 mV RMS.

The TDA8362 external audio input signal must have an amplitude of 350 mV RMS. The audio/video switch is controlled via the chrominance input pin.

### **On stereo models;**

On stereo models, the adjustable sound output pin (pin50) is used for mono sound. An external sound IF circuit TDA3845 is used for NICAM B/G, I stereo systems. For NICAM L stereo system, TDA4470B Sound IF IC is used so that obtain AM sound and NICAM I sound carrier. On German Stereo system, TBA120U is used as FM demodulator for second sound carrier.

## **SYNCHRONIZATION CIRCUIT**

The sync separator is preceded by a voltage controlled amplifier which adjusts the sync pulse amplitude to a fix level. The sync pulses are then fed to the slicing stage (separator) which operates at 50 % of the amplitude.

The separated sync pulses are fed to the first phase detector and to the coincidence detector. The coincidence detector is used for transmitter identification and to detect whether the line oscillator is synchronized. When the circuit is not synchronized, the voltage on the peaking control pin (pin 14) is LOW so that this condition can be detected externally

The IC TDA8362 contains a start up circuit for the horizontal oscillator. When this feature is required a current of 6.5 mA has to be supplied to pin 36.

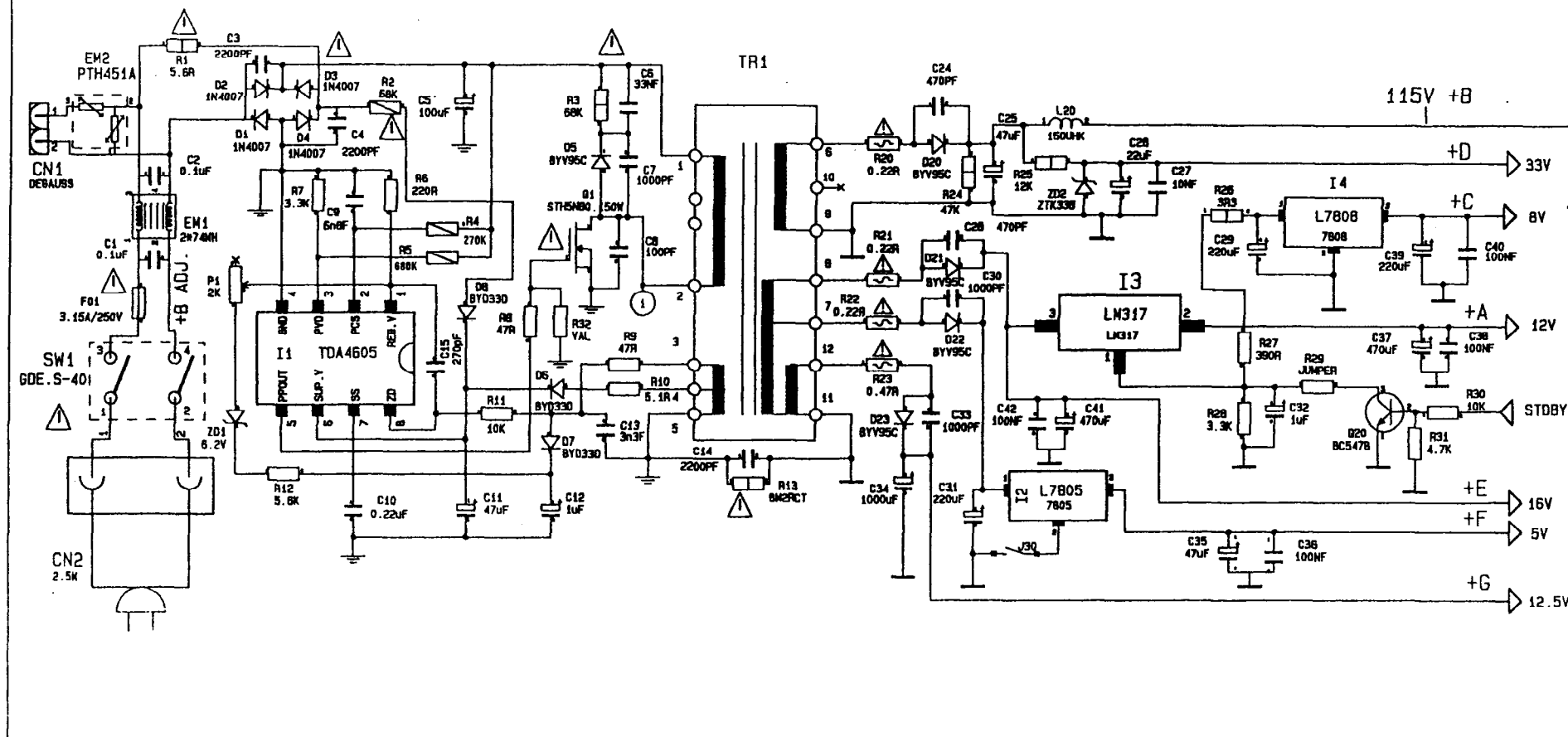
## **COLOR DECODING**

TDA8362 contains PAL and NTSC decoder (TDA8361 contains only PAL decoder) but it can cooperate with the secam add-on secam decoder TDA8395. The communication between two IC's is achieved via pin 32. The TDA8362 supplies the reference signal (4.43 MHz) for the calibration system of the TDA8395, identification of the color standard is via the same connection. When a SECAM signal is detected by the TDA8395 the IC will draw a current of 150 uA. When TDA8362 has not identified a color signal in this condition it will go into the SECAM mode, that means it will switch of the

R-Y and B-Y outputs and increase voltage level on pin 32.

## **4- VERTICAL DEFLECTION CIRCUIT WITH TDA3653B**

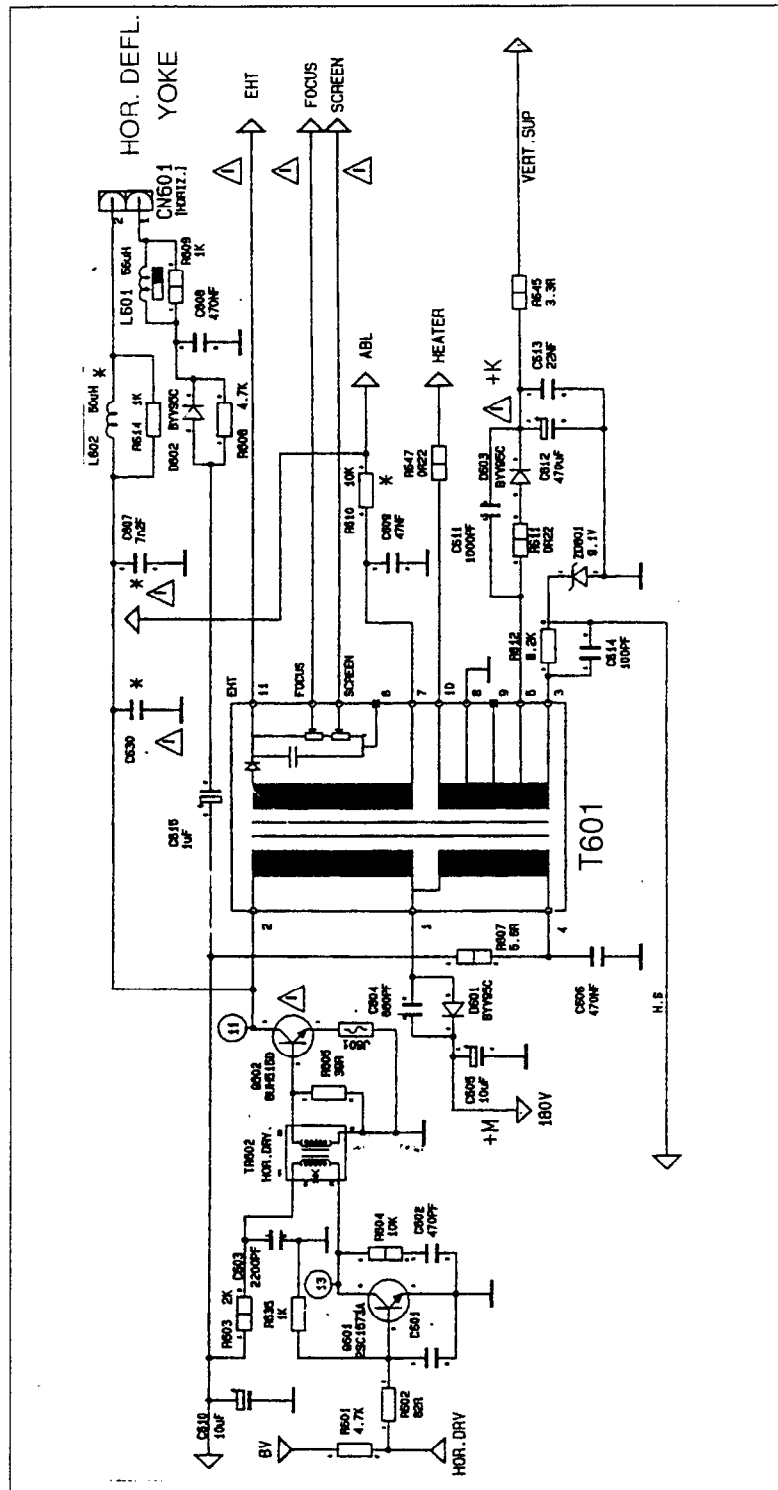
The TDA3653B is vertical deflection circuit for drive of various deflection systems with currents up to 1.5 A peak to peak. Pin 5 is the output pin. the supply for the output stage is fed to pin 6 and the output stage ground is connected to pin 4. Pin 1 is the input for the driver of the output stage . The signal at pin 1 is also applied via external resistors to pin 3 which is the input of the switching circuit. When the flyback starts, this switching circuit rapidly turns off the lower output stage and so limits the turn-off dissipation. It should be noted that the lowest voltage at pin 8 is > 2.5 V, during normal operation.



**SMPS STAGE CIRCUIT DIAGRAM**

## 5- HORIZONTAL DRIVE CIRCUIT

The horizontal drive pulses obtained from pin 37 of the TDA8362 are connected to base of Q601 (2SC1573) via R602. Q601 drives Q602 (BUH515D) via the drive transformer TR602. TR601 is the EHT transformer. +B (115 V) is switched by Q602 and TR601 generates both "EHT, FOCUS, G2 voltages required for CRT" and "170 V. Heater voltage and 26 V vertical supply voltage". The anode beam current information from pin 7 of TR601 is used for reducing contrast at too high beam currents, in order to stabilize the voltages derived from power supply.



**HORIZONTAL DRIVE PART CIRCUIT DIAGRAM**

## 6- SOUND OUTPUT STAGE

On mono models, TDA7056A is used as sound output amplifier with DC volume control. Pin 50 of the TDA8362 is AC coupled to the input pin 3 of the TDA7056A via a RC filter. It is supplied by + 12V coming from a separate winding in the SMPS transformer.

On stereo models, TDA7057AQ is used as sound amplifier. The sound level is controlled by sound processor TDA8425 via I<sup>2</sup>C bus on stereo boards. The outputs of TDA8425 ( pin 9 and pin 13 ) is connected to TDA7057AQ via a divider circuit and two capacitors.

## 7- TELETEXT STAGE

The teletext stage consists of I SAA5254. On this stage, it should be paid attention that there is video signal on pin 8 of I SAA5254 after a RCL filter, on condition that existence of the other requirements such as +5V, peripheral components.

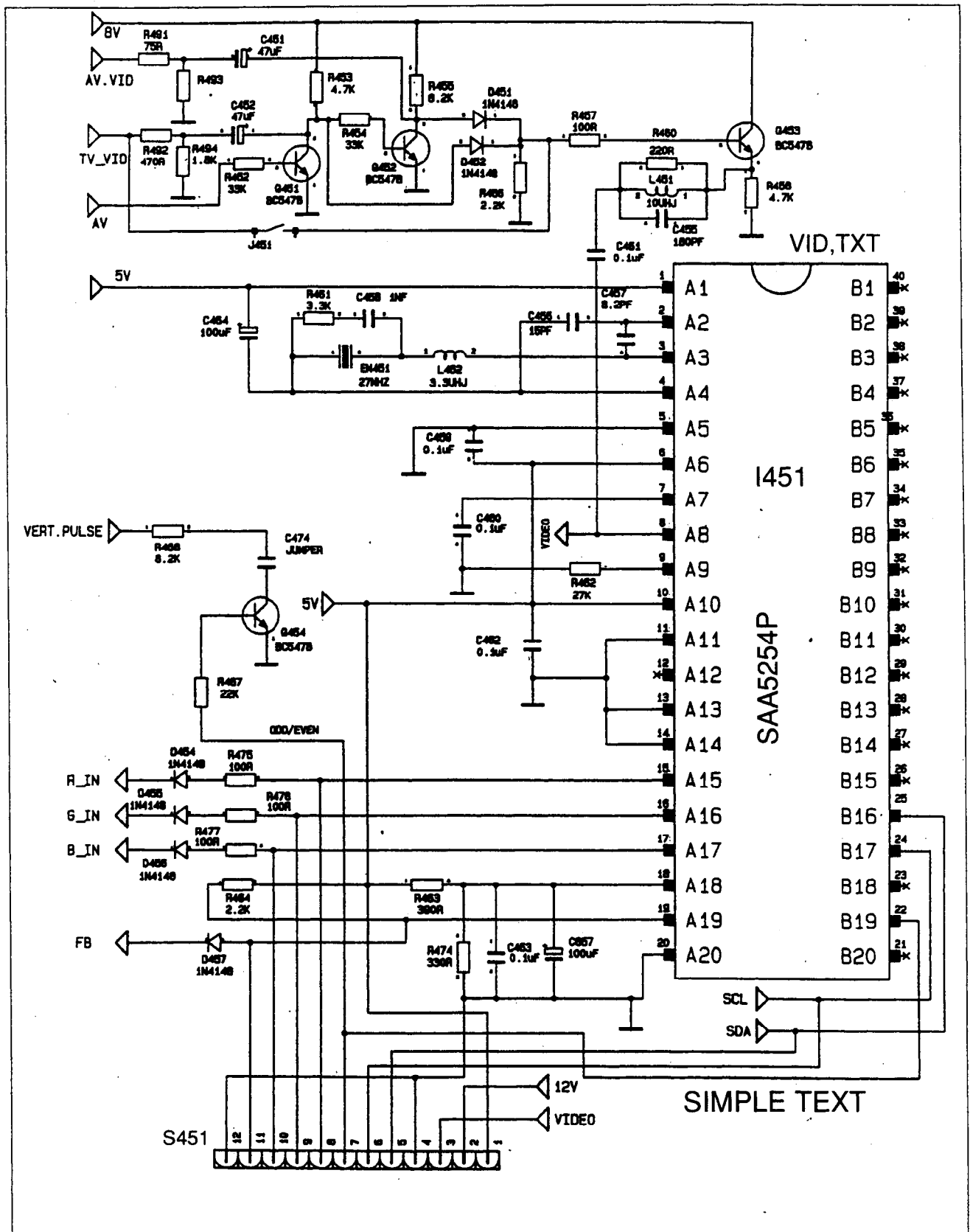
Basically, fastext stage consists two I's, STV5346 Teletext decoder and CTV 974 fastext controller with I<sup>2</sup>C bus interface. For List Mode a 2K EEPROM (PCF8582) can be added.

## 8- CRT STAGE

The TDA6103Q is used on CRT stage as video output amplifier. The TDA6103Q consists of three monolithic video output amplifiers. Each amplifier can be seen as an operational amplifier with negative feedback. The advantage of negative feedback is that the amplifier characteristics do not play an important role up to certain frequencies.

The device needs only one power supply voltage (+M ). In contrast to previous types of DMOS video amplifiers, the TDA 6103Q does not need a second supply voltage (12V.), so it saves one wire from motherboard to CRT stage.

As the TDA 8362 has no white point adjustment and no black current set-up, two adjustments are required for gain and three adjustments for black setting.



SIMPLE TEXT PART CIRCUIT DIAGRAM

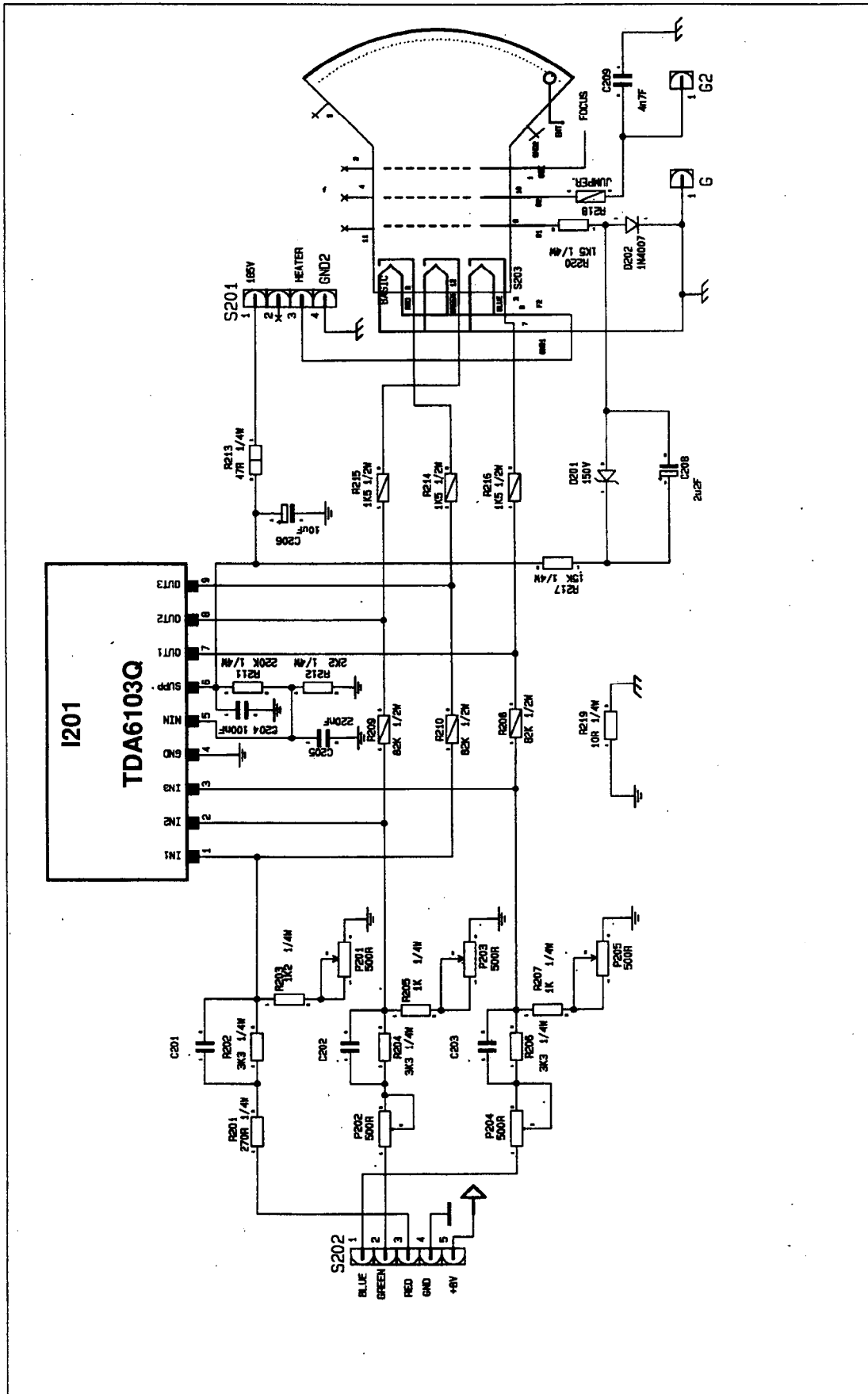
## THE DETAILS OF THE BOARDS

### Mother Board Contains

- ▶ TDA 8362 multistandard TV processor
- ▶ CTV 322 / CTV 352 S micro controller with OSD
- ▶ TDA 4605 Switch Mode Power Supply Controller
- ▶ TDA 4665 Baseband Delay Line
- ▶ TDA 8395 Secam Decoder
- ▶ TDA 7056A Audio Output Amplifier (for mono)  
TDA 7057AQ Audio Output Amplifier (for stereo)
- ▶ PCF 8582 2K EEPROM
- ▶ TDA 3653B Vertical Driver
- ▶ SAA 5254 Simple Text Processor
- ▶ TDA 9830 AM Demodulator
- ▶ LM 317 Voltage Regulator  
LM 7805 Voltage Regulator  
LM 7808 Voltage Regulator
- ▶ Tuner
- ▶ Infrared Receiver
- ▶ Horizontal Deflection Part
- ▶ Degaussing Circuit
- ▶ 4 push buttons ( p+, p-, v+, v-)
- ▶ Stand By Led
- ▶ Main Switch
- ▶ Scart Jack
- ▶ Extension Connectors

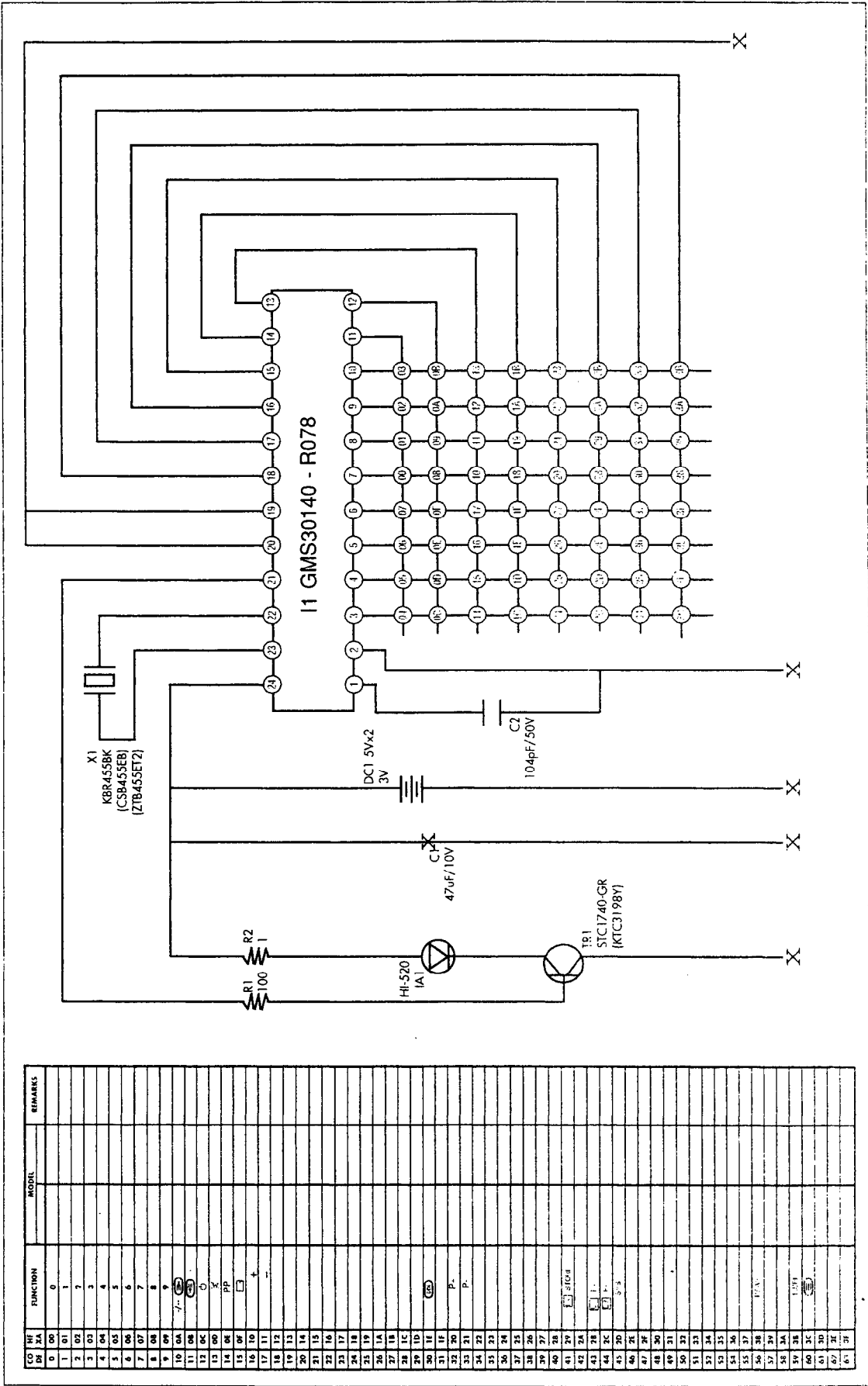
### CRT Board

- ▶ TDA 6103Q Video Output Amplifier



CRT BOARD CIRCUIT DIAGRAM

REMOTE CONTROLLER TRANSMITTER PCB CIRCUIT DIAGRAM





# THE DESCRIPTION OF THE INTEGRATED CIRCUITS

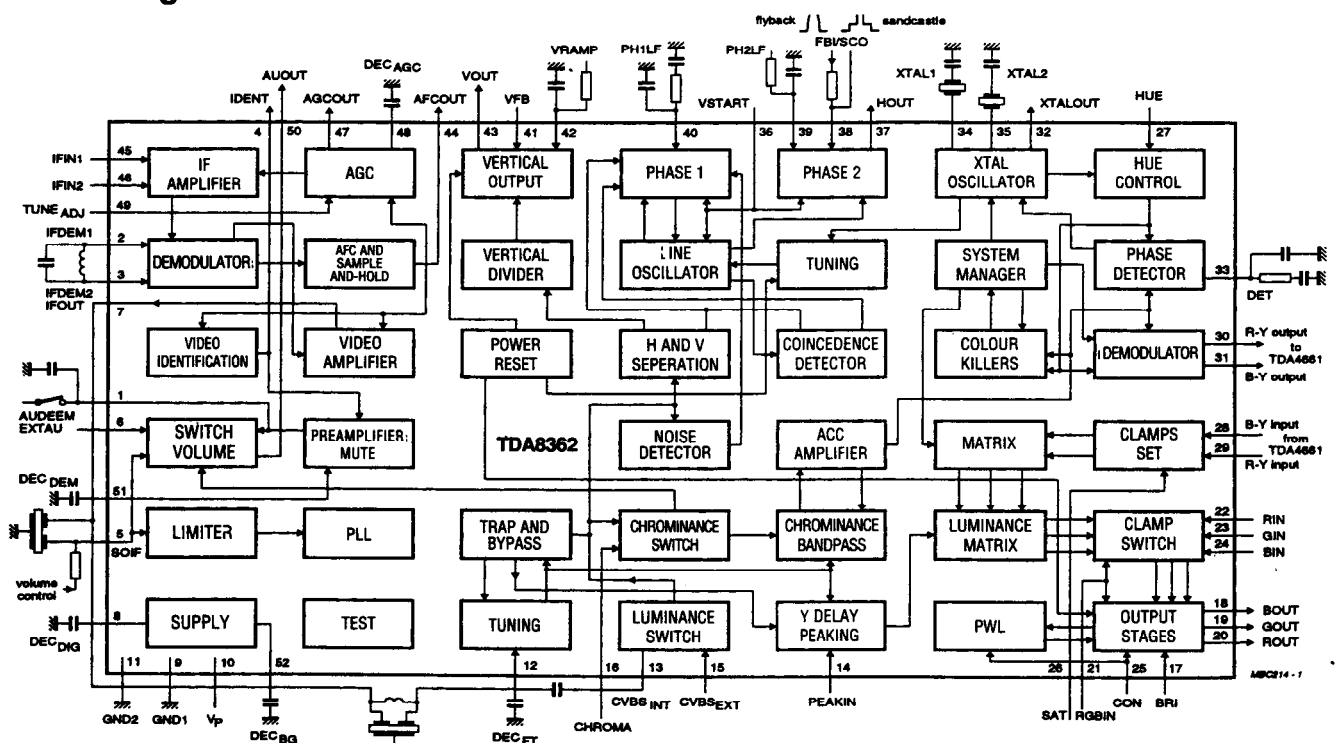
## Video Processing Unit With TDA8362

Video and time base is based on the TDA 8362 Multistandard TV Processor( Pal Decoder), TDA 4665 Baseband Delay Line and TDA8395 Secam Decoder.

### The Features of this Concept:

- Multistandard vision IF circuit (positive and negative modulation)
- Multistandard FM sound demodulator (4.5 MHz to 6.5 MHz)
- External Video and Audio Switches
- Integrated chrominance traps and baseband filters
- Integrated luminance delay line
- RGB control circuit with linear RGB inputs
- Horizontal synchronization with two loops and alignment-free horizontal oscillator without external components.
- Vertical count-down circuit (50-60 Hz) and vertical preamplifier
- Low dissipation
- Only one adjustment (vision IF demodulator )

### Block Diagram

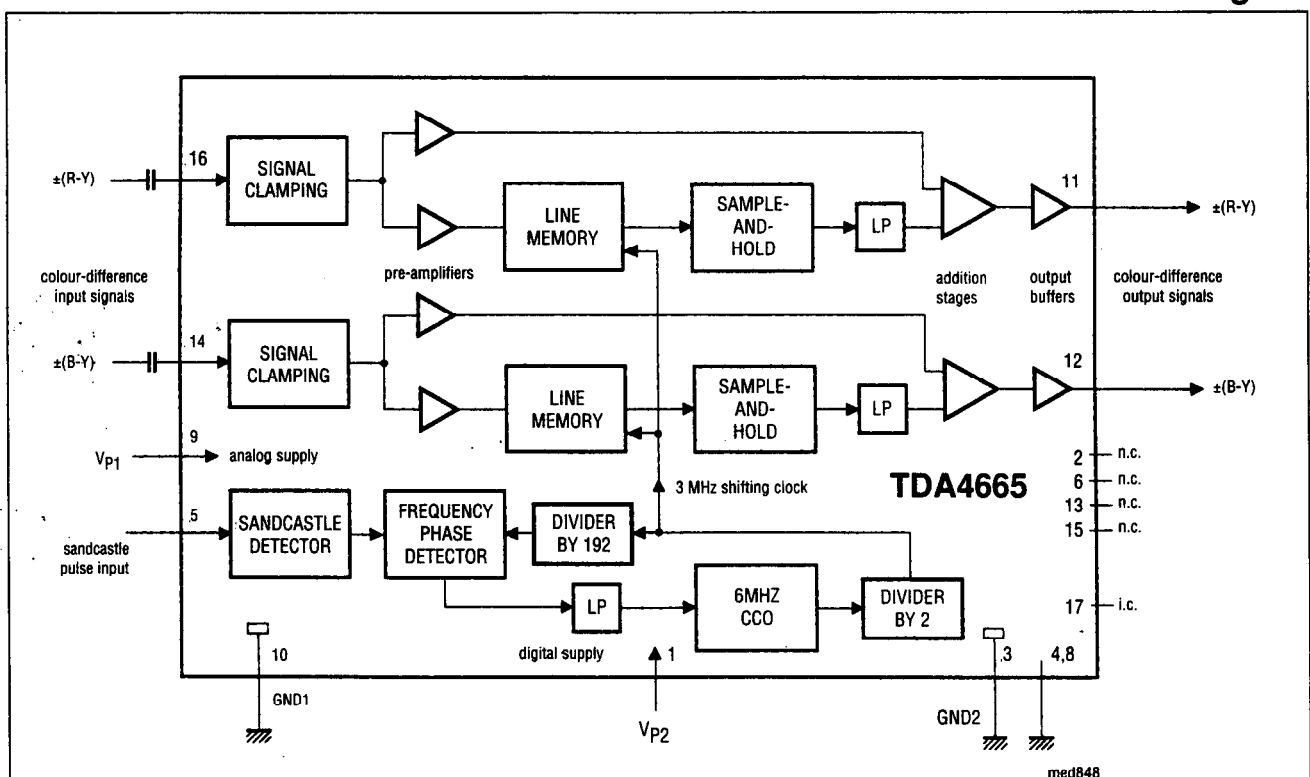


## TDA 4665

The TDA4665 is an integrated baseband delay line circuit. It provides a delay of 64  $\mu$ s for the color difference signals. (R-Y) and (B-Y), in multi-standard TVs.

PINNING		PIN VOLTAGE
1	Digital supply voltage	: 5V
2	Not connected	: -
3	Digital ground	: 0V
4	Test input	: 0V
5	Sandcastle input	: -
6	Not connected	: -
7	Test input	: -
8	Test input	: -
9	Analog supply voltage	: 5V
10	Analog ground	: -
11	-(R-Y) output	: 3.25 V
12	-(B-Y) output	: 3.25 V
13	Reference current	: -
14	-(B-Y) input	: 1.35 V
15	Not connected	: -
16	-(R-Y) input	: 1.35 V

**Block diagram**

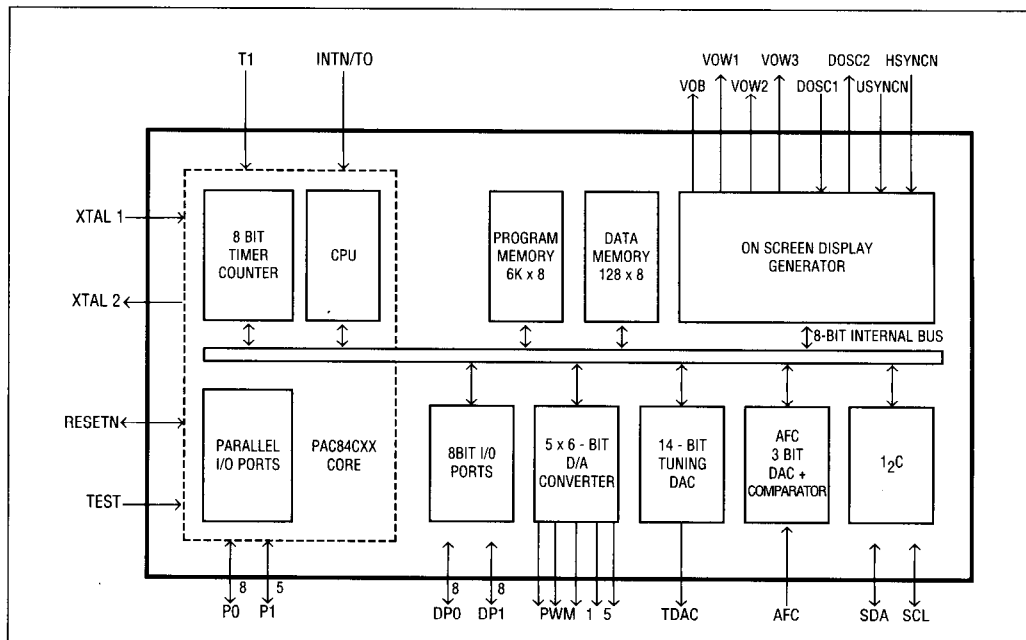


## Microcontroller Unit

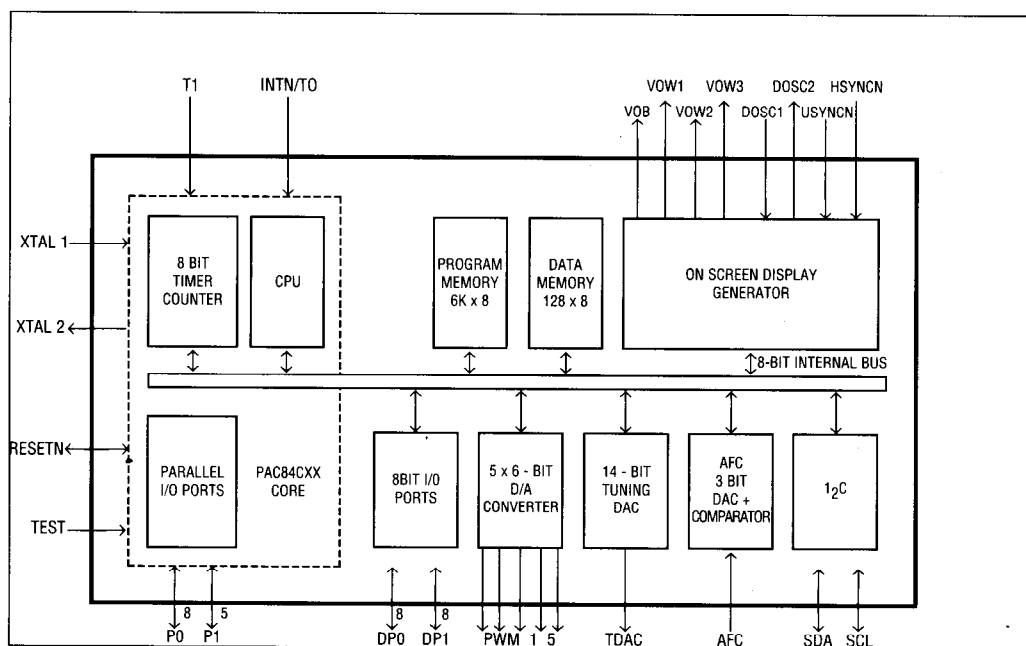
CTV 352 S(for stereo) and CTV 322(for mono) are a voltage synthesis tuning system with on screen display OSD of all relevant control function. Analog picture settings are controlled by 4 on-chip digital to analog converters. Sound volume can be controlled by the fifth on-chip digital to analog converter in mono only system. Full sound ( volume, bass, treble, balance ) in German Stereo and Nicam configuration and Teletext can be controlled via the I2C bus using a sound processor and teletext decoder. This controllers can control up to two scart plugs.

PINNING	PIN VOLTAGE
1 Tuning voltage control output	: 5V - 0V
2 Volume control output	: 0 - 5V
3 Brightness control output	: 0 - 5V
4 Color control output	: 0 - 5V
5 Contrast or hue control output	: 0 - 5V
6 Tone, balance or hue control output	: -
7 Band-switch 0-output	: -
8 Band-switch 1-output	: -
9 Analogue AFC sense input	: 2-4V
10 Dual/Non Dual language sound input	: -
11 VTR time constant control output	: -
12 Ext./int. audio/video source control output	: 5V (TV) - 0V (AV)
13 Keyboard scan line input/output	: -
14 Keyboard scan line input/output	: -
15 Keyboard scan line input/output	: -
16 Keyboard scan line input/output	: -
17 Keyboard scan line input/output	: -
18 Keyboard scan line input/output	: -
19 Keyboard scan line input/output	: -
20 System mode strobe output	: 5V
21 Ground supply input	: -
22 OSD red output	: 4.5Vpp
23 OSD green output	: 4.5Vpp
24 OSD blue output	: 4.5Vpp
25 OSD fast blanking output	: 4.5Vpp
26 Horizontal synchronization input	: 5Vpp HF
27 Vertical synchronization input	: 5Vpp HF
28 LC oscillator input for OSD	: 5V
29 LC oscillator output for OSD	: 5V
30 Test input; connected to ground	: -
31 Oscillator input; 10MHz crystal	: -
32 Oscillator output	: 2V
33 Power-on reset input/output	: 5V
34 Horizontal coincidence input	: 4.5V
35 RC-5 remote control input	: 4V
36 Mono/Stereo or language 1/2 output	

PINNING	PIN VOLTAGE
37 Sound effect control output	: -
38 System select output	: -
39 I <sup>2</sup> C-bus clock signal output	: 5V and 5Vpp
40 I <sup>2</sup> C-bus data signal output	: 5V and 5Vpp
41 Standby/On control input/output	: 0V (ST-BY) 5V (Open)
42 +5V supply voltage input	: 5V



Block diagram of PCA84C641



Block diagram of PCA84C841

## Power Supply With TDA4605

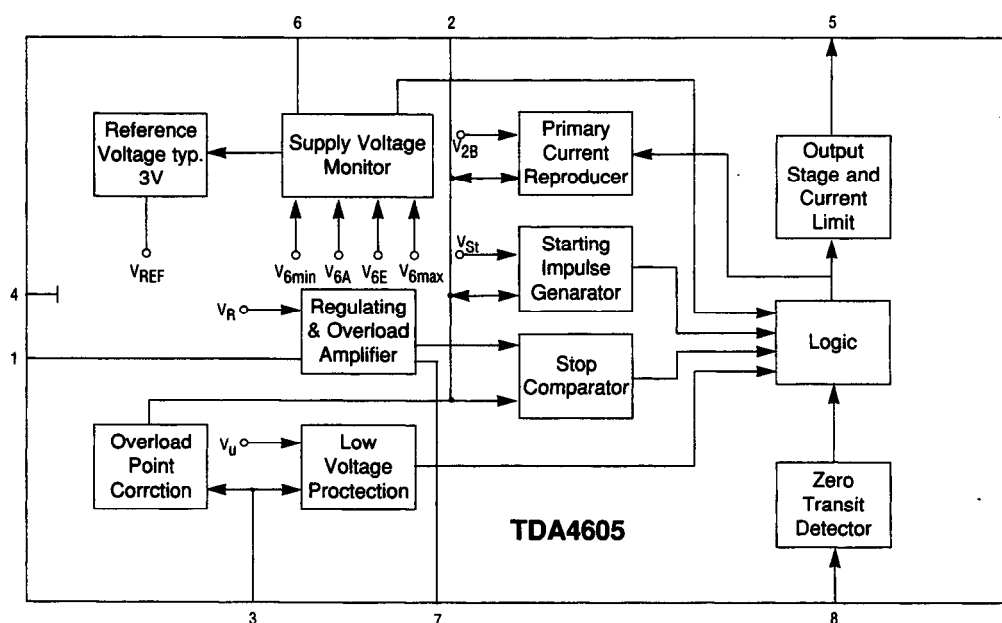
The IC TDA 4605 controls the MOS power transistor and performs all necessary regulation and monitoring functions in free running flyback converters.

### Features

- Overload protection
- Burst operation under short circuit conditions
- Loop error protection
- Switch-off if line voltage is too low
- Line voltage compensation of overload point
- Soft start for quite start up
- Chip over temperature protection
- On-chip parasitic transformer oscillation suppression circuit

### TDA 4605-3

PINNING		PIN VOLTAGE	
		ST-BY	NORM.
1	Information Input Concerning Secondary Voltage	0.4V	0.4V
2	Information Input Regarding the Primary Current	1V	1.2V
3	Input for Primary Voltage Monitor	2.1V	2V
4	Ground	0V	0V
5	Output	0.8V	8V (10Vpp)
6	Supply voltage Input	12V	12.8V
7	Input for Soft-Start and Integrator Circuit	1.1V	1.9V
8	Input for the Feedback of the Oscillator	0.3V	0.4V



## Pin Definitions and Functions

Pin No.	Function
1	<b>Information Input Concerning Secondary Voltage</b> By comparing the regulating voltage - obtained from the regulating winding of the transformer - with the internal reference voltage, the output impulse width on pin 5 is adjusted to the load of the secondary side (normal, overload, short-circuit, no load).
2	<b>Information Input Regarding the Primary Current</b> The primary current rise in the primary winding is simulated at pin 2 as a voltage rise by means of external RC-element. When a voltage level is reached that's derived from the regulating voltage at pin 1, the output impulse at pin 5 is terminated. The RC-element serves to set the maximum power at the overload point set.
3	<b>Input for Primary Voltage Monitoring</b> In the normal operation V3 is moving between the thresholds V3H and V3L ( $V3H > V3 > V3L$ )- $V3 < V3L$ : SMPS is switched OFF (line voltage too low). $V3 > V3H$ : Compensation of the overload point regulation (controlled by pin 2) starts at V3H : $V3L = 1.7$ .
4	<b>Ground</b>
5	<b>Output</b> Push-pull output provides $\pm 1$ A for rapid charge and discharge of the gate capacitance of the power MOS-transistor.
6	<b>Supply Voltage Input</b> A stable internal reference voltage VREF is derived from the supply voltage also the switching thresholds V6A, V6E, V6 max and V6 min for the supply voltage detector. If $V6 > V6E$ then VREF is switched on and switched off when $V6 < V6A$ - In addition the logic is only enable for $V6 \min < V6 < V6 \max$ -
7	<b>Input for Soft-Start</b> Start-up will begin with short pulses by connecting a capacitor from pin 7 to ground.
8	<b>Input for the Oscillation Feedback</b> After starting oscillation, every zero transition of the feedback voltage (falling edge) through zero (falling edge) triggers an output pulse at pin 5. The trigger threshold is at + 50 mV typical.

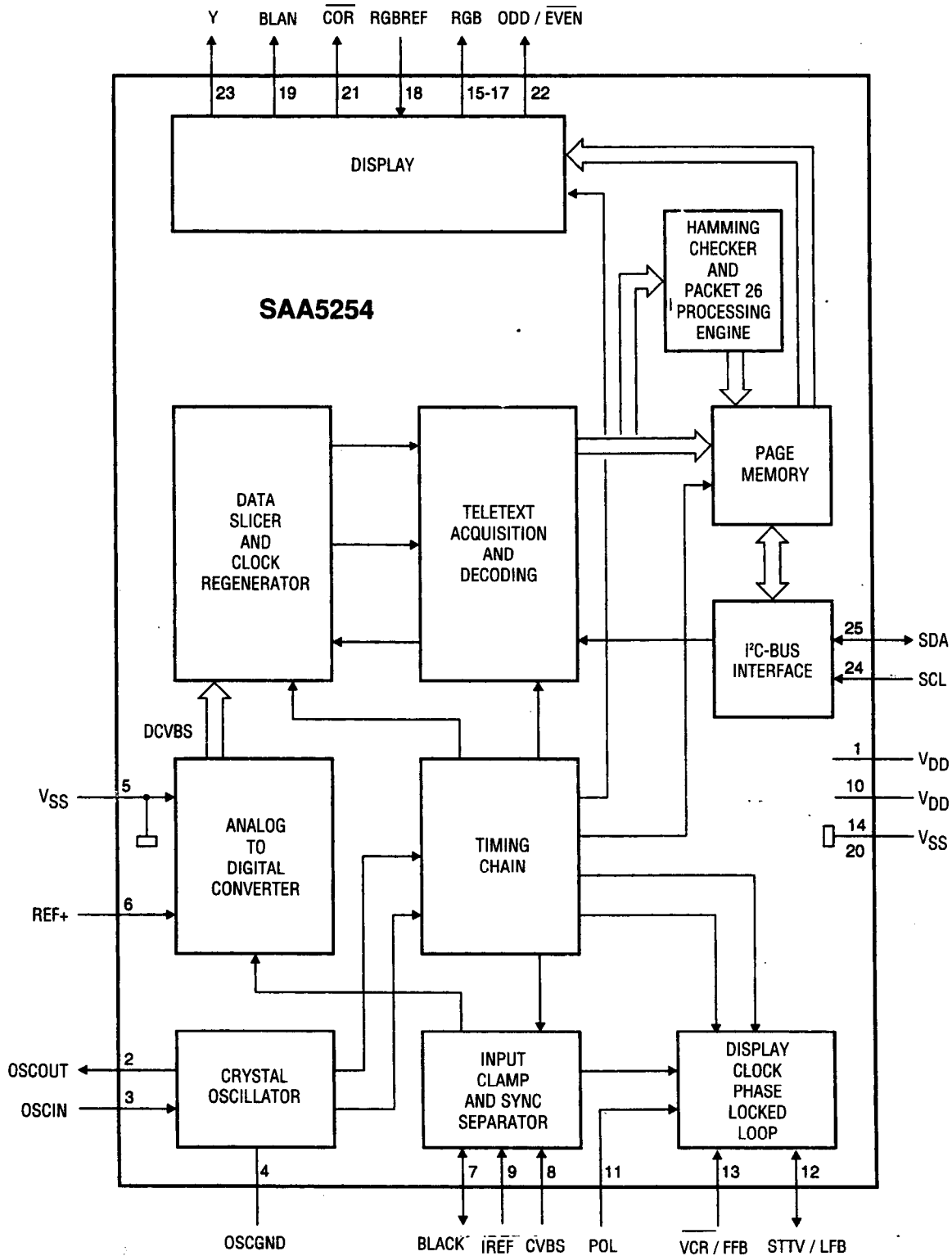
## TELETEXT PART

Simple text stage consists of SAA 5254 Teletext decoder. This I is controlled via I<sup>2</sup>C bus.

Basically fasttext stage consists two I's, STV 5346 Teletext decoder and CTV 974 Fasttext controller with I<sup>2</sup>C bus interface. For List Mode a 2K EEPROM (PCF8582) can be added.

### SAA 5254

PINNING	PIN VOLTAGE
1 + 5V supply	: -
2 27 MHz crystal oscillator output	: -
3 27 MHz crystal oscillator input	: -
4 0V crystal oscillator ground	: 0V
5 0V ground	: 0V
6 Positive reference voltage for the ADC.	: 5V
7 Video black level storage pin, connected to ground via a 100 nF capacitor	: -
8 Composite video input pin	: 1Vpp
9 Reference current input pin, connected to ground via a 27kohm resistor	: -
10 +5V supply	: 5V
11 STTV/FB/FFB polarity selection pin	: -
12 Sync to TV output pin/line flyback input pin. Function controlled by an internal register bit (scan sync mode)	: -
13 PLL time constant switch/field flyback input pin. Function controlled by an internal register bit (scan sync mode)	: -
14 0V ground	: 0V
15 Dot rate character output of the RED color information	
16 Dot rate character output of the GREEN color information	
17 Dot rate character output of the BLUE color information	
18 DC input voltage to define the output high level on the RGB pins	
19 Dot rate fast blanking output	
20 Ground	: 0V
21 Programmable output to provide contrast reduction of the TV picture formixed text and picture displays or when viewing newflash/subtitle pages;open drain output	: -
22 25Hz output synchronized with the CVBS input's field sync pulses to produce a non-interlaced display by adjustment of the vertical deflection currents	: -
23 Dot rate character output of teletext foreground color information; open drain output	: -
24 Serial clock input for the I <sup>2</sup> C-bus. It can still be driven during power-down of the device	: 5Vpp
25 Serial data port for the I <sup>2</sup> C-bus; open drain output. It can still be driven during power-down of the device	: 5Vpp
26 to 40 Internally connected.Must be left open-circuit in application	: -



Block diagram for SIT129 (DIL40) package



## Vertical Deflection Circuit With TDA3653B

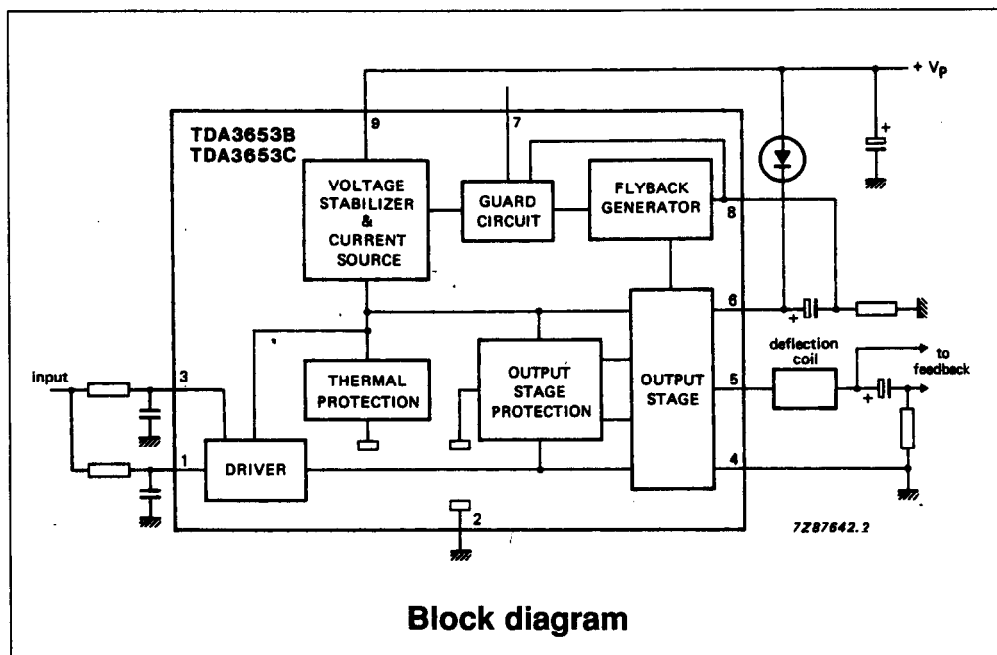
The TDA3653B is a vertical deflection output circuit for drive of various deflection systems with current up to 1.5 A peak to peak.

### Features

- Driver
- Output Stage
- Thermal Protection
- Flyback Generator
- Voltage Stabilizer
- Guard Circuit

### TDA 3653B

PINNING		PIN VOLTAGE
1	Output Stage Driver Input	1.2V and 2Vpp
2	Ground	-
3	Switching Circuit Input	1.2V and 2Vpp
4	Output Stage Ground	-
5	Output Voltage	13V and 45Vpp
6	Supply Voltage for the Output Stage	26V
7	DC Voltage produced by the Guard Circuit	-
8	Flyback Generator Output	8V
9	Supply Voltage	26V



## Video Output Amplifier

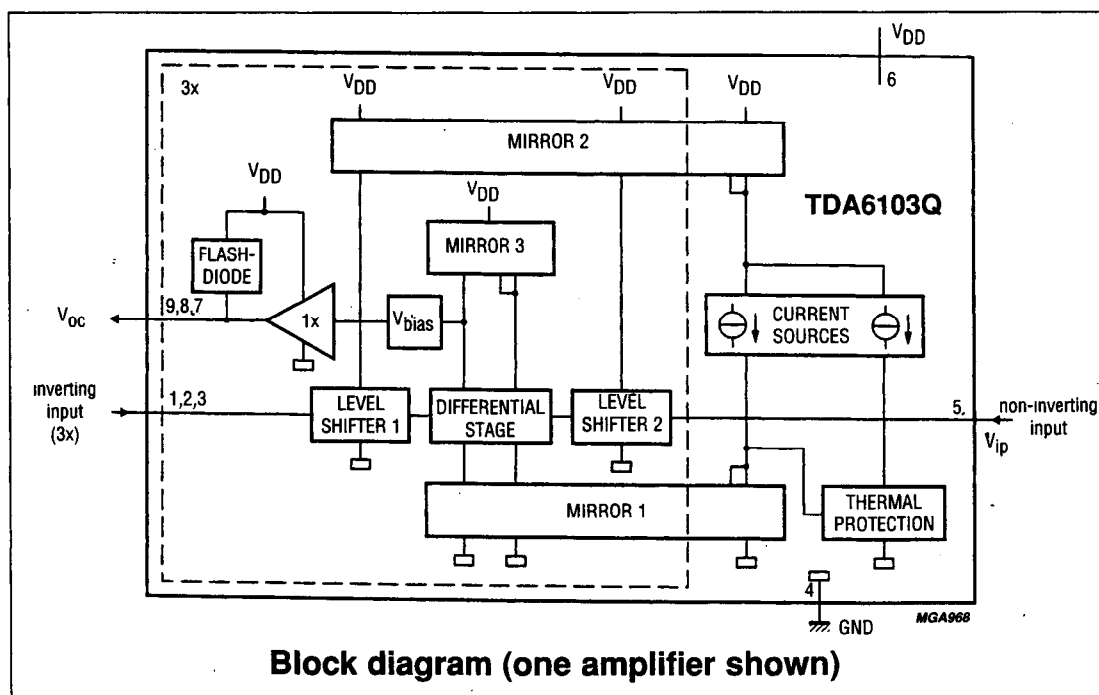
On CRT Board, TDA 6103Q is used as video output amplifier. The TDA 6103Q includes three video output amplifier intended to drive the three cathodes of color CRT.

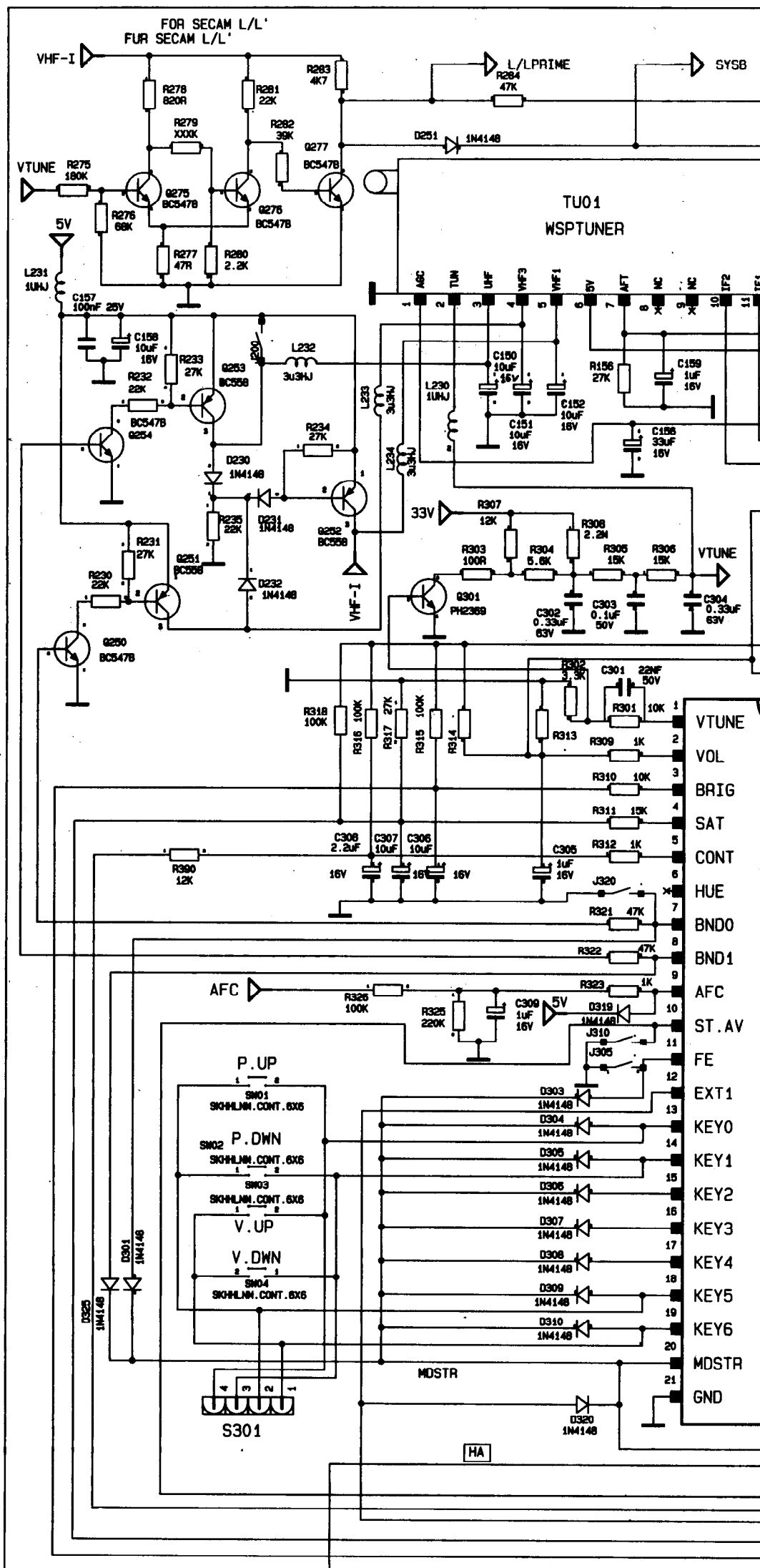
### Features

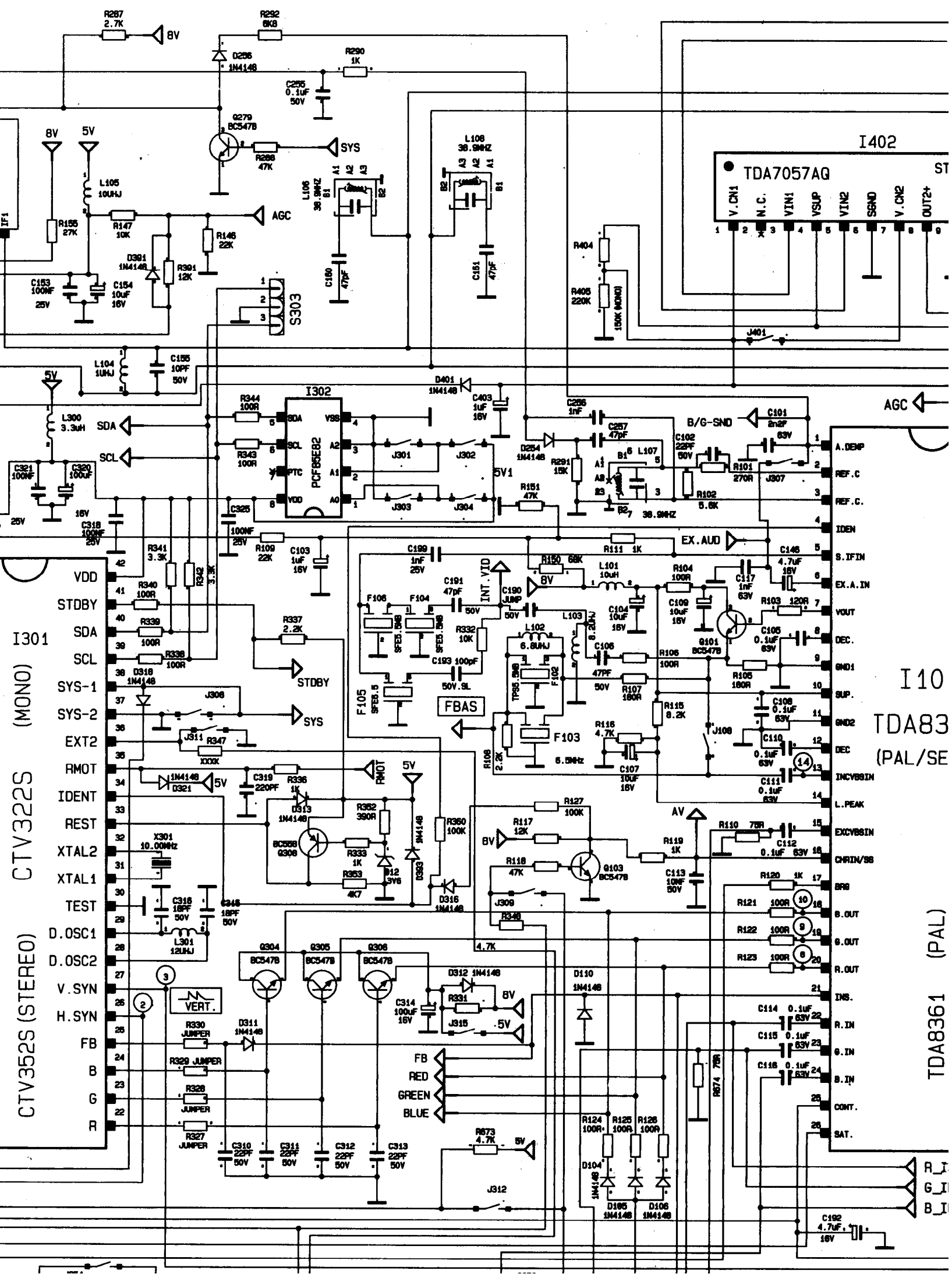
- High Bandwidth : 7.5 Mhz typical
- High slew rate : 1600 V/us
- Simple application with a variety of color decoders
- Only one supply voltage needed
- Internal protection against positive appearing CRT flashover discharges
- One non-inverting input with a low minimum input voltage of 1V
- Thermal protection
- Controllable switch-off behavior

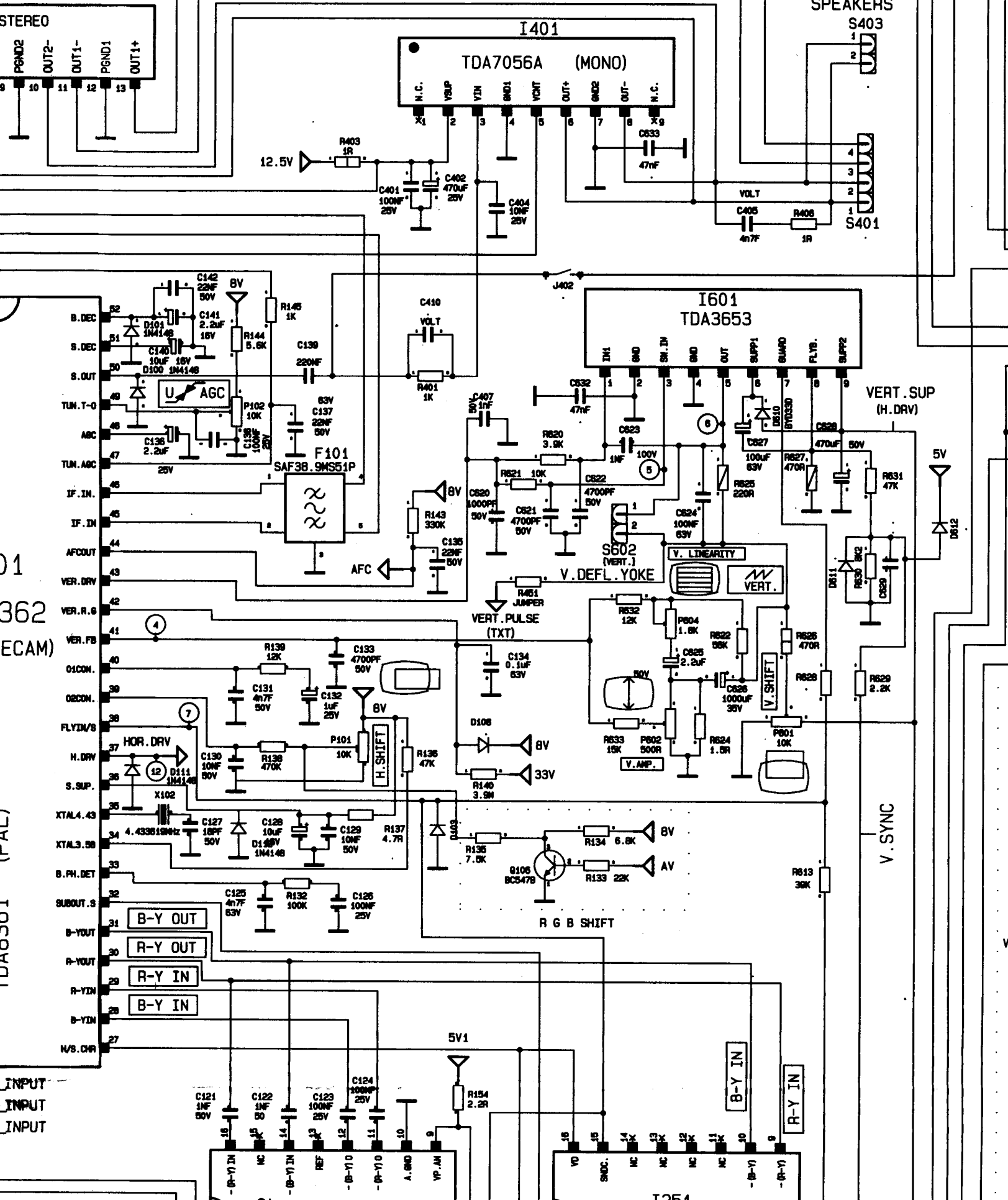
### TDA 6103Q

PINNING		PIN VOLTAGE
1	Inverting input 1	:1.0Vpp
2	Inverting input 2	:1.0Vpp
3	Inverting input 3	:1.0Vpp
4	Ground, fin	: -
5	Non-inverting input	:1.8V
6	Supply voltage	:180V
7	Cathode output 3	: 90Vpp
8	Cathode output 2	: 90Vpp
9	Cathode output 1	: 90Vpp

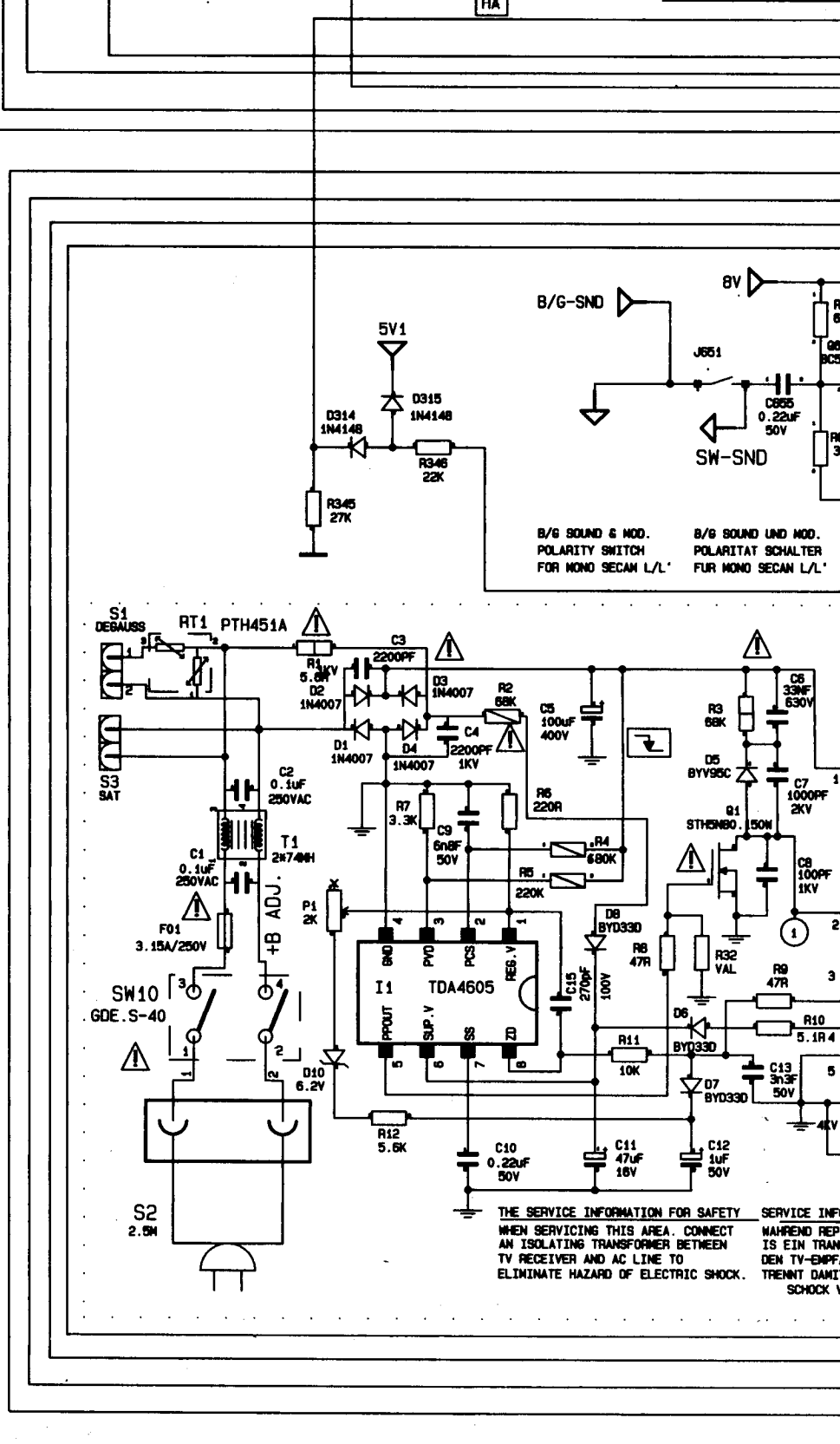




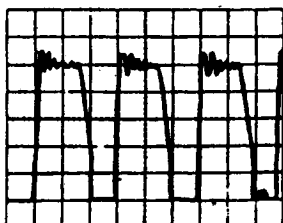






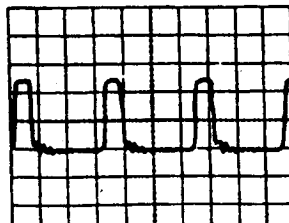


1) 5 usn/div 100 volt/div



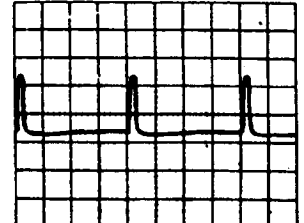
Drain of Q1

2) 20 usn/div 2volt/div



IC 301 pin 26

3) 5m sn/div 2volt/div

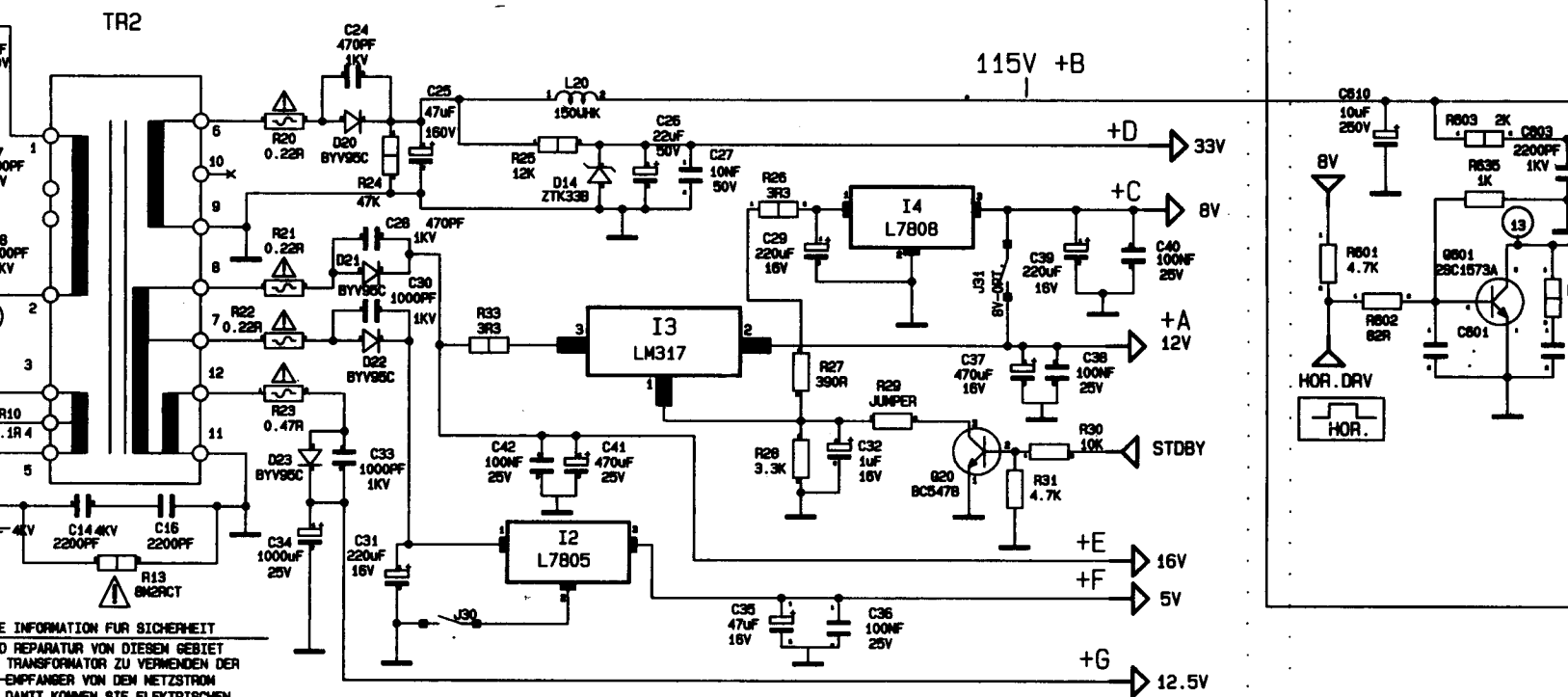
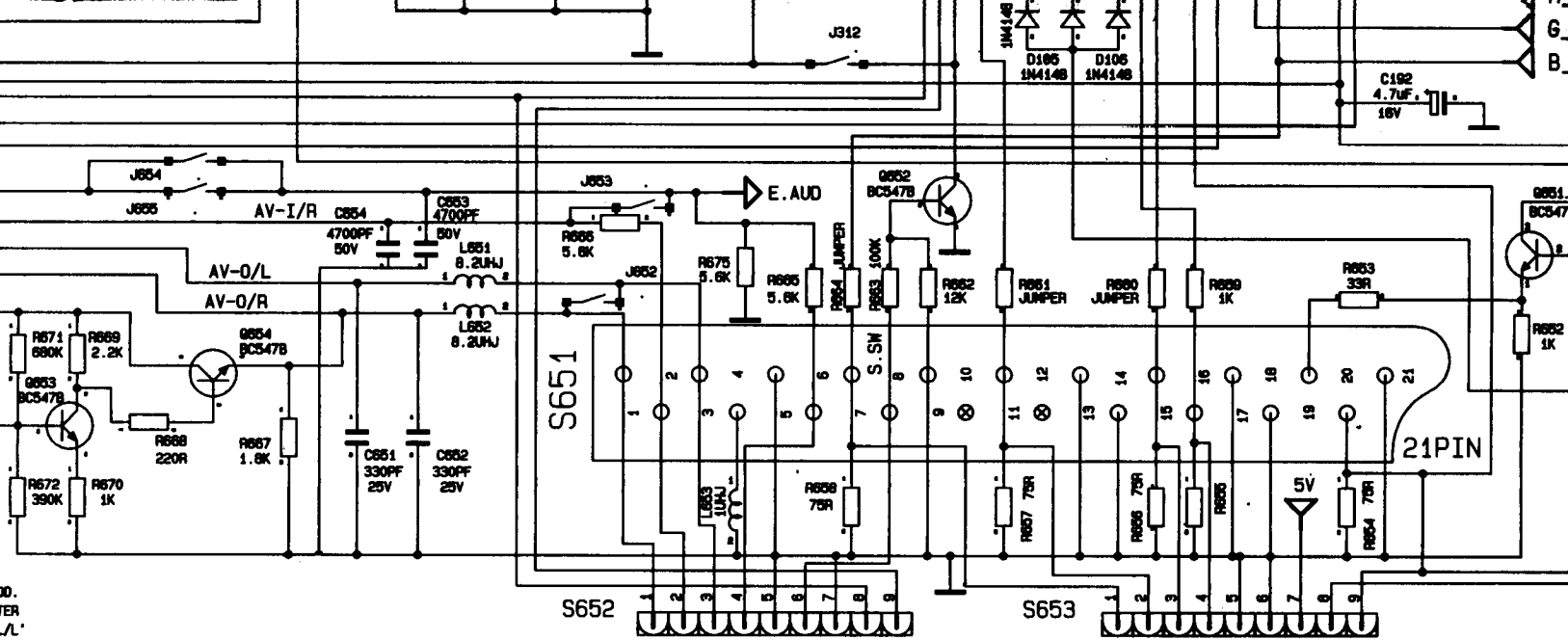


IC 301 pin 27

4)



IC

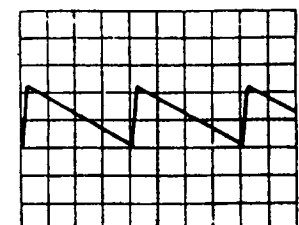


INFORMATION FÜR SICHERHEIT  
 REPARATUR VON DIESEM GEBIET  
 TRANSFORMATOR ZU VERMEIDEN DER  
 EMPFÄNGER VON DEM NETZSTROM  
 DAMIT KOMMEN SIE ELEKTRISCHEN  
 SCHOCK VERMEIDEN.

AV-O/R  
 AV-O/L  
 AV-I/R  
 EX. AUD

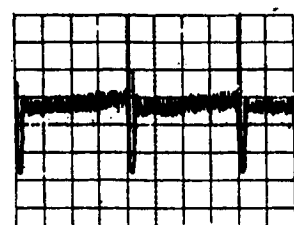
## OSCILLOSCOPE

4) 5 msn/div 0,5 volt/div



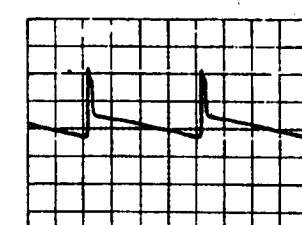
IC 101 pin 41

5) 5 msn/div 1 volt/div



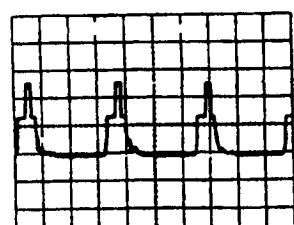
IC 601 pin 3

6) 5 msn/div 20 volt/div



IC 601 pin 5

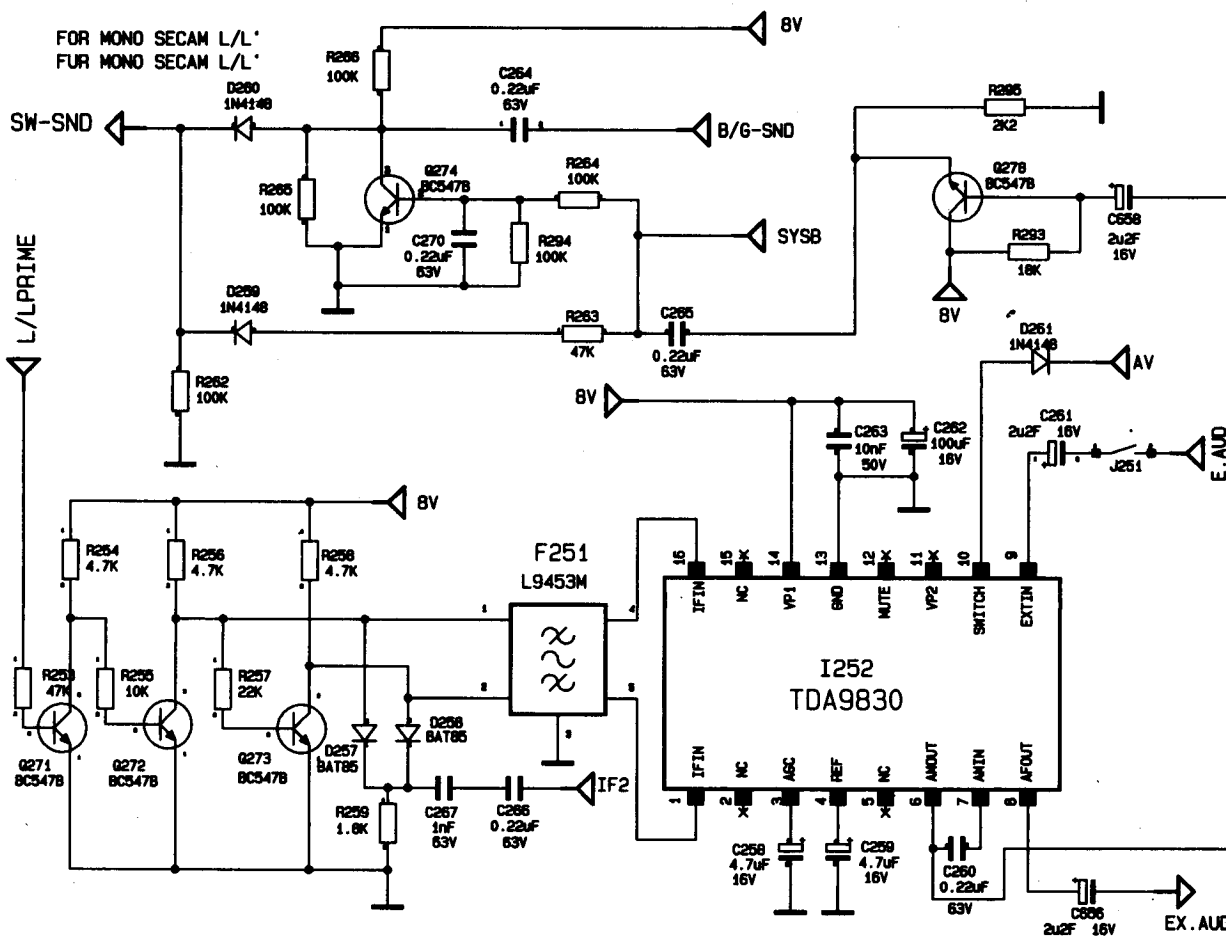
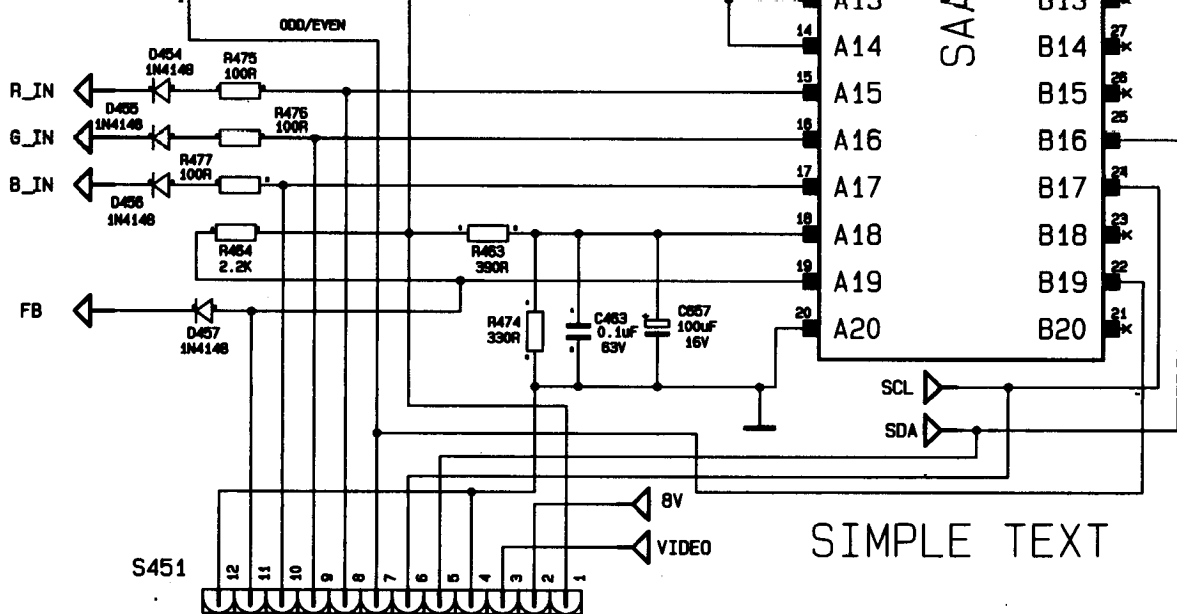
7) 20 usn/div 2 volt/div



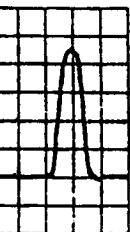
IC 101 pin 38





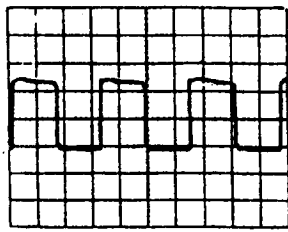


250 volt/div



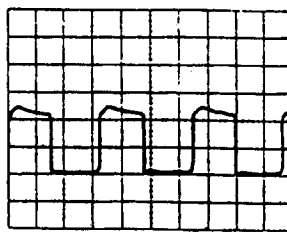
f Q602

12) 20 usn/div 0.2 volt/div



IC 101 pin 37

13) 20 usn/div 50 volt/div



Collector of Q601

14) 20 usn/div 1 volt/div



IC 101 pin 13



